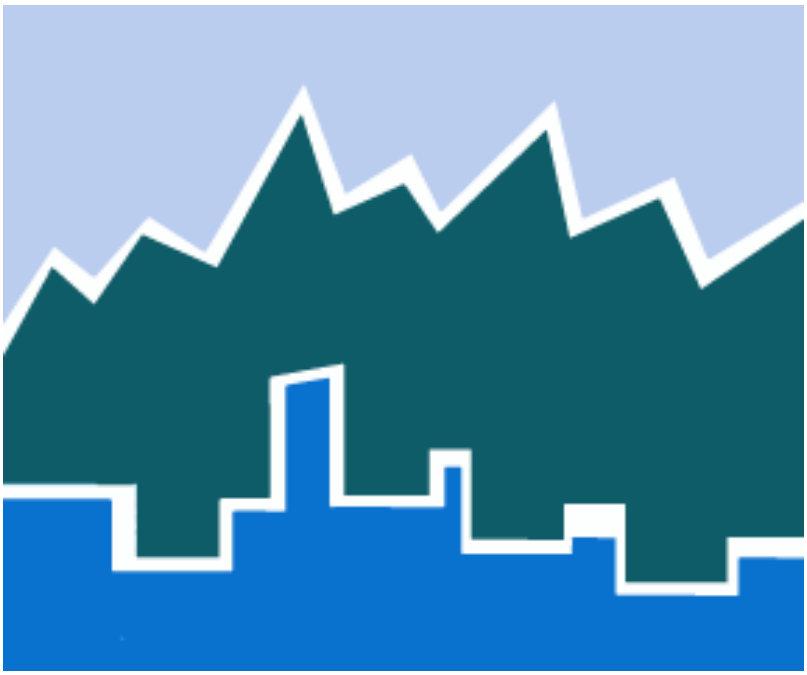

Summary of Travel Trends

2017 National Household Travel Survey

U.S. Department of Transportation
Federal Highway Administration

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16. Abstract

The 2017 National Household Travel Survey (NHTS) provides an inventory of daily travel in the US and its major Census Divisions and add-on areas. It is the only source of national-level statistics on personal travel in the US. The survey series (conducted since 1969) includes demographic data on households, people, vehicles, and detailed information on daily travel by all modes of transportation and for all purposes.

NHTS survey data are collected from a sample of households and expanded to provide estimates of trips and miles of travel by travel mode, trip purpose, and other important attributes. When combined with historical data from the earlier surveys (1969, 1977, 1983, 1990, and 1995 NPTS and the 2001 NHTS, 2009 NHTS, and 2017 NHTS) these data serve as a rich source of information on the trends in travel over time.

This report summarizes trends in household and personal travel patterns, including information on changes to the household-based vehicle fleet and commuting patterns. The report begins with a summary of the changes in the population, demographics, and related travel. Next, travel trends are examined at the household level, including differences between different areas of the US and by household income, for example. Next, changes in travel are summarized at the person-level, including trips by purpose and miles of travel by age and sex. Following sections detail changes in vehicle availability and usage, commute travel patterns, temporal distribution, and the travel of special populations.

The 2017 NHTS was conducted with major changes in sampling strategy (an address-based sample compared to previous land-line random-digit sample) and methodology (Web-based self-reports compared to previous computer-aided interviewing). These and other critical changes are summarized here in Appendix A and in the data documentation at https://nhts.ornl.gov/. Researchers and data users are cautioned to do their best to assess how the change in methods may affect their estimates and to caution their readers about these critical changes in the data series.

17. Key Words **National Household Travel Survey, NHTS, US travel, daily travel, means of travel, mode of travel, trip purpose, VMT, PMT, demographics and travel, vehicle use trends, fleet changes, vehicle availability, commute data, commute patterns, travel purpose, travel patterns by age, travel patterns by gender**	18. Distribution Statement **No restrictions**		
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In 2017, the NHTS underwent a major change in survey methodology. The most impactful changes are 1) using an address-based sample rather than an RDD land-line sample, and 2) moving from an interviewer assisted telephone surveys (CATI) to a self-completed web-based survey. These changes made the 2017 NHTS a better sample survey, with better coverage of US households and lower respondent burden.
In addition, the method of obtaining trip length used a Google API shortest path route between a geocoded origin and destination whereas previous NHTS used the respondent's estimate of trip length for each trip. These changes may have impacted the number of reported trips, including incidental trips, and the estimate of trip lengths, which in turn impact VMT and PMT estimates. The change in methods may have measurable impacts on many of the survey estimates, and unknown impacts yet to be identified. Some of the measured impacts of methods changes in 2017 are outlined in Appendix A. Users should take into account the impacts identified here and do further analysis of their own to assess the best use of the data series for any specific application.

The data presented here are based on a sample of the population, and so is subject to sampling error. Sampling error is the calculated statistical imprecision due to interviewing a random sample instead of the entire population. The margin of error provides an estimate of how much the results of the sample may differ due to chance when compared to what would have been found if the entire population was interviewed. For the 2017 data the margin of error is added to and subtracted from the point estimate to provide the range for each estimate. Sampling error is the only error that can be quantified, but there are other errors to which surveys are susceptible. Please read 'Reliability of the Estimates' in Chapter 1 for more details.

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2017 National Household Travel Survey

1.0 INTRODUCTION AND RELIABILITY OF THE ESTIMATES

Policymakers rely on transportation statistics, including data on personal travel behavior, to formulate strategic transportation policies and to improve the safety and efficiency of the U.S. transportation system. Policymakers, individual state Department of Transportation (DOTs), metropolitan planning organizations, industry professionals, and academic researchers use the data to gauge the extent and patterns of travel, plan new investments, and better understand the implications of travel trends on the nation's transportation infrastructure.

To address these data needs, the U. S. Department of Transportation (USDOT) initiated an effort in 1969 to collect detailed data on personal travel. The 1969 survey was the first Nationwide Personal Transportation Survey (NPTS). The survey was conducted again in 1977, 1983, 1990, and 1995. In 2001, the survey was expanded by integrating the Federal Highway Administration (FHWA) managed NPTS and the Bureau of Transportation Statistics-sponsored American Travel Survey (ATS), and the survey was re-named the National Household Travel Survey (NHTS). The NHTS was conducted without the long-distance component again in 2009 and 2017.

The recent evaluation of the NHTS data program found that NHTS data are used extensively to inform policy initiatives, provide context for decision-making, and benchmark progress for policies and programs.[1] More directly, NHTS data are used as inputs to statistical analyses and models related to health, energy, air quality, and mobility. At the state and local levels, NHTS has its greatest impact in developing, calibrating, or validating travel demand models that are used to inform transportation planning and project selection.

The 2017 NHTS is the most recent national inventory of daily travel, and the authoritative source on the travel behavior of the American public. The NPTS/NHTS data series is the only source of national travel behavior data that tracks trends in personal and household travel. The survey gathers trip-related data, such as mode of transportation, duration, distance, and purpose of trip, and links the travel-related information to demographic, geographic, and economic data for analysis purposes.

The 2017 NHTS is a nationally representative survey of travel behavior conducted from April 2016 through April 2017. The 2017 survey is the latest in the series and updates information gathered in the NPTS conducted in 1969, 1977, 1983, 1990, and 1995, and the NHTS conducted in 2001 and 2009. The 2017 NHTS includes samples added by 13 state and local planning agencies from around the country, plus the core national sample.

[1] Federal Highway Administration Research and Technology Evaluation: National Household Travel Survey Program Final Report, Publication Number: FHWA-HRT-16-082, Date: August 2017: https://www.fhwa.dot.gov/publications/research/randt/evaluations/16082/index.cfm

During the survey period, researchers collected data from roughly 130,000 households, which were sampled based on postal address lists, and 275,000 persons in the United States. They mailed sampled households a survey form with a small incentive and asked them to join the survey by either logging onto the website or mailing the form back. Each participating household reported all travel by household members on a randomly assigned 24-hour single "travel day." They assigned travel days for all 7 days of the week, including all holidays. Weighting reflected the day of week and month of travel to allow comparisons of weekdays or seasons.

This report uses 2017 NHTS data to highlight travel trends over the entire survey series: almost 50 years of travel data for the United States. There are nine chapters, with each chapter representing a topic in travel behavior. The first section of statistical data focuses on demographic trends of households, persons, vehicles, and workers. The next chapter provides statistical data on overall household travel. Subsequent sections of this report present person travel, private vehicle travel, vehicle use, and commute travel patterns. The final chapter highlights travel behavior of special populations and some new data elements from the 2017 NHTS. The research findings in this report do not include a detailed analysis of the 2017 NHTS data set in its entirety but provide a very short overview of available data.

Of course, this report relies on the work of previous authors and reproduces the analysis done as part of the previous reports. The first *Summary of Travel Trends* was a pamphlet produced for the 1983 NPTS by Comsis. In 1995 and 2001, Oak Ridge (ORNL) produced the trends report after retrieving the 1977 archived data. In 2009, the FHWA produced the report with Travel Behavior Analysts, and FHWA produced the current report with Travel Behavior Analysts and Westat. All errors are the responsibility of the authors.

1.1. CHANGES IN THE NHTS DATA COLLECTION METHOD

In 2017, the NHTS underwent a major change in survey methodology. The most impactful changes are 1) using an address-based sample rather than a random digit dialing (RDD) landline telephone sample, and 2) moving from primarily an interviewer-led computer-assisted telephone interviewing (CATI) to a self-completed web-based survey with CATI as an alternative. With these changes, the 2017 NHTS sample had better coverage of U.S. households as it included households without landline telephones. The design reduced coverage bias and respondent burden.

In addition, the method of obtaining trip length used a Google API (application programming interfaces) shortest path route between a geocoded origin and destination whereas previous NHTS' used the respondent's estimate of trip length for each trip. These changes may have impacted the number of reported trips, including incidental trips, and the estimate of trip lengths, which in turn impact vehicle miles of travel (VMT) and person miles of travel (PMT) estimates. The change in methods may have measurable impacts on many of the survey estimates, and unknown impacts that not yet identified.

Appendix A outlines some of the measured impacts of methods changes in 2017. Users should consider the impacts identified here and do further analysis of their own to assess the best use of the data series for any specific application.

1.2. RELIABILITY OF THE ESTIMATES (SOURCE AND ACCURACY)

An estimate based on a sample survey has two types of error — sampling error and nonsampling error. The estimated standard errors provided approximate the true sampling errors. They do incorporate the effect of some nonsampling errors in response and enumeration, but do not account for any systematic biases in the data.

Nonsampling error. The full extent of nonsampling error is unknown, but special studies have quantified some sources of nonsampling error. Some sources of nonsampling errors in surveys include the inability to obtain information about all persons in the sample, differences in the interpretation of questions, inability or unwillingness of respondents to provide correct information, inability of respondents to recall information, errors made in collecting and processing the data, errors made in estimating values for missing data, and failure to represent all sample households and all persons within sample households (undercoverage).

In a national sample such as that used for the NHTS, undercoverage can occur when households reside in very newly constructed homes whose addresses are not yet available on the sampling frame, households have simplified addresses (e.g., John Doe, Anytown, MD 12345), or the household respondent either accidentally or purposely does not report all the people living in the household. The weighting process adjusts for some nonresponse and matches independent age-sex-race-ethnicity population controls, which partially corrects for the biases due to survey undercoverage. However, biases exist in the estimates to the extent that missed persons in missed households or missed persons in interviewed households have travel characteristics different from those of interviewed persons in the same age-sex-race-origin group.

Sampling error. When a portion of the population is surveyed, rather than the entire population, estimates differ from the true population values that they represent. This difference, or sampling error, occurs by chance, and variability is measured by the standard error of the estimate. The standard error is the margin of error (MOE), which is the half-confidence interval at the 95% confidence level.

Sample estimates from a given survey design are unbiased when an average of the estimates from all possible samples would yield, hypothetically, the true population value. In this case, the sample estimate and its margin of error can be used to construct approximate confidence intervals, or ranges of values that include the true population value with known probabilities.

The margin of error in this document is at the 95 percent confidence level. To construct the bounds of the margin of error—that is, a high estimate and a low estimate—the MOE shown in tables is added to and subtracted from the estimate given.

For example, if the estimate is 500 and the margin of error is 2, then in 95 repeated samples the estimates obtained would fall between 498 and 502; therefore, if the survey were conducted 100 times with the same protocols, 95 percent of the time the true population estimate would fall between 498 and 502. It is important to determine the significant differences from those estimates that are a product of the known sample error when analyzing these data. When comparing values, if the ranges of two estimates overlap, then there is no significant difference in the estimated values.

Users should be cautious when computing estimates for smaller population groups, such as specific geographies, groups of people, or even less common forms of transportation, like bicycle, Uber/Lyft, or even transit. While the weights support a large variety of travel-related estimates, caution should be taken for estimates generated from a small number of responding households or persons. Computing the confidence interval or MOE is especially important for such analyses to ascertain whether any apparent nominal differences are actually statistically different.

On the other hand, the NHTS sample can produce robust estimates of major travel indicators at census region or division (as shown in Table 2b) or by Metropolitan Area size (as shown in Table 28), and for specific groups of travelers (see Section 9 on Travel by Special Populations). Using the data appropriately is the responsibility of the analyst. The data trends shown here are just a small sample of the analysis possible with the NHTS data, and each of the topics presented could be the subject of a more in-depth and stringent analysis.

Public-use national data from the 2017 NHTS is available for download and for on-line analysis on the NHTS website (http://nhts.ornl.gov). Weights and replicates are included for each of the data files. Weights match the sample of households and persons to the population for demographic characteristics and geographic levels. Use replicate weights to calculate the MOE of each estimate.

2.0 OVERVIEW

Tables 1a through 1d present summary statistics on key demographic characteristics by survey year. For years 2009 and 2017, the MOEs are also included.

There was a major change in the method used to collect trip distance in 2017 that impacts the estimates of PMT, VMT, and average person and vehicle trip lengths. In 2017, the NHTS calculated trip length using the shortest path routes between geocoded origins and destinations. Previous surveys used self-reported distances.

As a result of the change in method, the 2017 original estimates of VMT and PMT may not be directly comparable with previous years. The 2017 trip distance is adjusted to be more comparable, shown as "adj." in this document. See Appendix A for further details.

Table 1a. Summary Statistics on Demographic Characteristics: Households

Households (thousands)					
Survey Year	**All**	**1 person**	**2 persons**	**3 persons**	**4+ persons**
1969	62,504	10,980	18,448	10,746	22,330
1977	75,412	16,214	22,925	13,046	23,227
1983	85,371	19,354	27,169	14,756	24,092
1990 (adj)	93,347	22,999	30,114	16,128	24,106
1995	98,990	24,732	31,834	16,827	25,597
2001	107,365	27,718	35,032	17,749	26,867
2009	113,101	31,741	37,728	18,104	25,528
2009 MOE	-	106	135	257	243
2017	118,208	32,952	40,056	18,521	26,679
2017 MOE	-	-	-	97	97

Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones, the cell-phone only (CPO) households.
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.

Table 1b. Summary Statistics on Demographic Characteristics: Persons

Persons (thousands)						
Survey Year	**All**	**Under 16**	**16-19**	**20-34**	**35-64**	**65+**
1969	197,213	60,100	14,598	40,060	62,982	19,473
1977	213,141	54,958	16,552	52,252	66,988	22,391
1983	229,453	53,682	15,268	60,788	75,353	24,362
1990 (adj)	239,416	54,303	13,851	59,517	82,480	26,955
1995	259,994	61,411	14,074	59,494	93,766	31,249
2001	277,203	44,985	14,296	57,680	103,296	32,884
2009	283,054	44,724	19,414	50,844	129,202	38,870
2009 MOE	-	441	743	1,089	874	0
2017	321,419	45,498	17,755	64,339	126,350	47,657
2017 MOE	0	756	945	954	985	0

Persons (thousands)						
Survey Year	**All 16+**	**All Male**	**All Male 16+**	**All Female**	**All Female 16+**	**All 5+**
1969	137,113	94,465	66,652	102,748	73,526	NA
1977	158,183	102,521	74,542	110,620	83,721	198,434
1983	175,771	111,514	83,645	117,939	92,080	212,932
1990 (adj)	182,803	114,441	86,432	124,975	96,371	222,101
1995	198,583	126,553	95,627	133,441	102,956	241,675
2001	208,155	125,321	100,308	132,240	107,847	257,560
2009	238,330	139,257	116,421	143,797	121,908	283,054
2009 MOE	441	81	338	81	338	0
2017	256,101	148,039	124,903	153,560	131,198	321,419
2017 MOE	756	0	471	0	397	0

Note:

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- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.

Table 1c. Summary Statistics on Demographic Characteristics: Drivers and Workers

Survey Year	Drivers (thousands)			Workers (thousands)		
	All	Male	Female	All	Male	Female
1969	102,986	57,981	45,005	75,758	48,487	27,271
1977	127,552	66,199	61,353	93,019	55,625	37,394
1983	147,015	75,639	71,376	103,244	58,849	44,395
1990 (adj)	163,025	80,289	82,707	118,343	63,996	54,334
1995	176,330	88,480	87,851	131,697	71,105	60,593
2001	190,425	94,651	95,773	145,272	78,264	67,007
2009	212,309	106,813	105,496	151,373	81,939	69,434
2009 MOE	959	709	631	893	769	728
2017	223,277	111,163	112,114	156,988	83,589	73,399
2017 MOE	827	588	963	1,012	495	859

Note:

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- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.

Table 1d. Summary Statistics on Demographic Characteristics and Total Travel

Travel Characteristics					
Survey Year	Household Vehicles (thousands)	Household Vehicle Trips (millions)	Household Vehicle Miles of Travel (VMT in millions)	Person Trips (millions)	Person Miles of Travel (PMT in millions)
1969	72,500	87,284	775,940	145,146	1,404,137
1977	120,098	108,826	907,603	211,778	1,879,215
1983	143,714	126,874	1,002,139	224,385	1,946,662
1990 (adj)	165,221	193,916	1,695,290	304,471	2,829,936
1995	176,067	229,745	2,068,368	378,930	3,411,122
2001	201,308	233,030	2,274,769	384,485	3,783,979
2009	210,778	233,849	2,245,111	392,023	3,732,791
2009 MOE	918	2,381	56,157	3,644	141,396
2017	222,579	220,430	2,105,882	371,152	3,970,287
2017 MOE	917	2,561	88,113	4,395	150,877
2017 (adj)	-	-	2,321,820	-	4,291,150
2017 (adj) MOE	-	-	98,064	-	155,470

Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- Household VMT and PMT "adjusted" includes estimates of miles in all vehicles, including “18” Rental Car.
- In 1969, household vehicles did not include pickups or other light trucks.

The 2017 NHTS obtained larger households with more workers compared to the 2009 survey, possibly because the 2017 address-based sample included about 45 percent cell phone only (CPO) households, which are more likely younger and working. CPO households were not included in the sample in 2009 (see Appendix B).

The data series in Tables 2a and 2b show that over the last five decades, American households acquired more vehicles and drivers. In the United States in 1969, there were as many vehicles as workers. By 1990 and continuing to the present, there are as many vehicles as drivers.

As average household size has stabilized, average vehicles per household, licensed drivers per household, and workers per household have all remained rather stable over the last decade or so.

There are important differences between the census regions listed in Table 2b (the states in each census region are listed in Appendix C). The West continues to have the highest household size, vehicle ownership, and driver rates in the country. The Midwest has smaller households on average, and fewer workers per household. The Northeast has fewer vehicles and drivers per household.

Table 2a. Major Travel Indicators by Survey Year

Major Travel Indicators by Year								
Travel Indicator	**1969**	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Persons per Household	3.16	2.83	2.69	2.56	2.63	2.58	2.50	2.55
Vehicles per Household	1.16	1.59	1.68	1.77	1.78	1.89	1.86	1.88
Licensed drivers per Household	1.65	1.69	1.72	1.75	1.78	1.77	1.88	1.89
Vehicles per Licensed Driver	0.70	0.94	0.98	1.01	1.00	1.06	0.99	1.00
Workers per Household	1.21	1.23	1.21	1.27	1.33	1.35	1.34	1.33
Vehicles per Worker	0.96	1.29	1.39	1.40	1.34	1.39	1.39	1.42

Note:

- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- In 1969, household vehicles did not include pickups or other light trucks.

Table 2b. Major Travel Indicators by Survey Region

Major Travel Indicators by Region						
Census Region	**Persons per Household**	**Vehicles per Household**	**Drivers per Household**	**Vehicles per Driver**	**Workers per Household**	**Vehicles per Worker**
ALL (1)	2.55	1.88	1.89	1.00	1.33	1.42
Northeast	2.53	1.63	1.79	0.91	1.34	1.22
Midwest	2.42	1.96	1.83	1.07	1.29	1.52
South	2.56	1.90	1.91	0.99	1.31	1.45
West	2.70	1.98	1.98	1.00	1.38	1.43

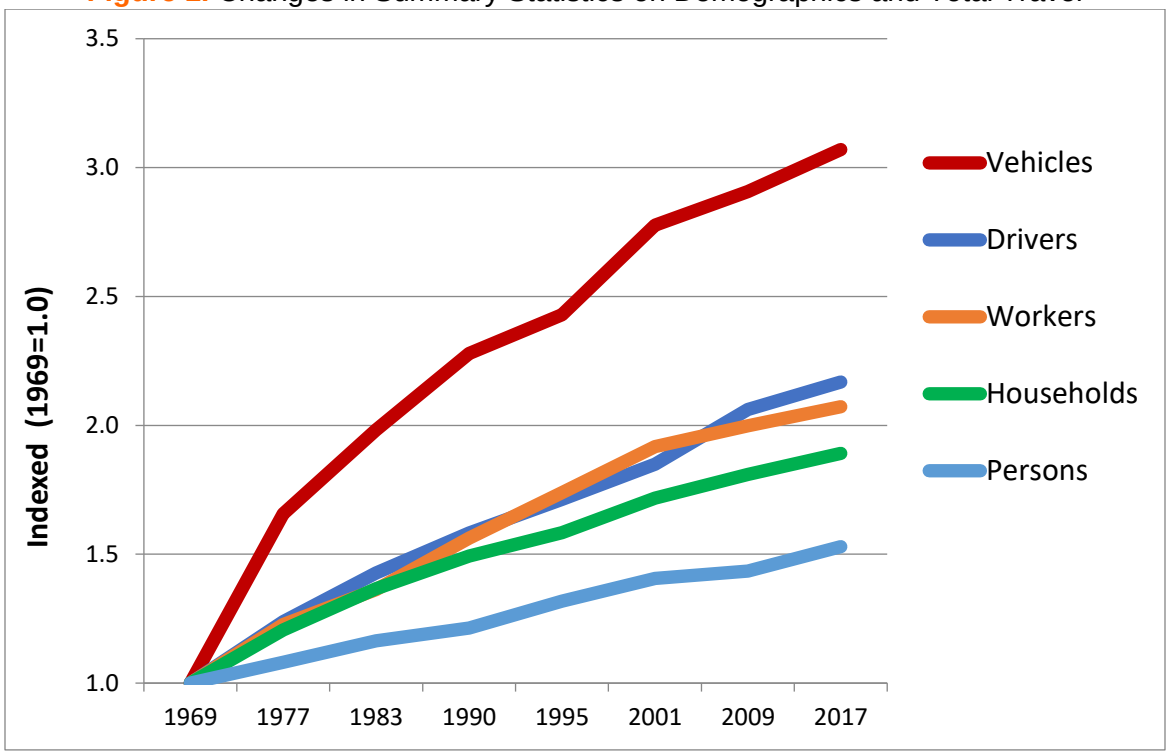
Note:

- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- In 1969, household vehicles did not include pickups or other light trucks.

During the past four decades, the growth in the number of workers and drivers has far outpaced the growth in the number of households and persons.

However, as shown in Figure 1, the growth in the number of vehicles has outpaced all other indicators. Since 1969, the annual rate of increase in the number of personal vehicles was almost 1½ times the annual rate of increase in the number of drivers.

Figure 1. Changes in Summary Statistics on Demographics and Total Travel



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- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- In 1969, household vehicles did not include pickups or other light trucks.

The data series indicates that the per capita growth in travel that the United States experienced over the last four decades may be changing. Statistically, of the 10 estimates of major travel indicators shown in Tables 3a and 3b, 7 are lower than the 2001 estimates and the remainder are statistically the same (within the confidence interval). Importantly, the number of reported person- and vehicle-trips per person is statistically lower in 2017 than in 2009, which is statistically lower than 2001.

The estimates of travel for U.S. households show significant changes in trip-making. The estimates of person and vehicle trips per household are lower in 2017 than 2009, which in turn was lower than the 2001 estimates.

As mentioned earlier, there was a major change in the method used to collect trip distance in 2017 that impacts the estimates of PMT, VMT, and Average Person and Vehicle Trip Lengths. In 2017, the NHTS calculated trip length using the shortest path routes between geocoded origins and destinations. Previous surveys used self-reported distances.

As a result of the change in method, the original estimates of VMT and PMT may not be directly comparable with previous years. See Appendix A for further details.

Table 3a. Summary of Household Travel Statistics

	Household Statistics			
Survey Year:	Daily Person Trips per Household	Daily PMT per Household	Daily Vehicle Trips per Household	Daily VMT per Household
1969	6.36	61.55	3.83	34.01
1977	7.69	68.27	3.95	32.97
1983	7.20	62.47	4.07	32.16
1990	8.94	83.06	5.69	49.76
1995	10.49	94.41	6.36	57.25
2001	9.66	95.24	5.95	58.05
2009	9.50	90.42	5.66	54.38
2009 MOE	0.09	3.38	0.06	1.34
2017 orig.	8.60	92.02	5.11	48.81
2017 orig. MOE	0.10	3.50	0.06	2.04
2017 adj.		99.46		53.81
2017 adj. MOE		3.60		2.27

Note:

- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here excludes them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- Household VMT and PMT "adjusted" includes estimates of miles in all vehicles, including “18” Rental Car.

Table 3b. Summary of Person Travel Statistics

Survey Year:	Person Statistics					
	Daily Person Trips per Person	Daily PMT per Person	Daily Vehicle Trips per Driver	Daily VMT per Driver	Average Person Trip Length (miles)	Average Vehicle Trip Length (miles)
1969	2.02	19.51	2.32	20.64	9.67	8.89
1977	2.92	25.95	2.34	19.49	8.87	8.34
1983	2.89	25.05	2.36	18.68	8.68	7.90
1990	3.76	34.91	3.26	28.49	9.47	8.85
1995	4.30	38.67	3.57	32.14	9.13	9.06
2001	4.09	36.89	3.35	32.73	10.04	9.87
2009	3.79	36.13	3.02	28.97	9.75	9.72
2009 MOE	0.03	1.35	0.03	0.71	0.36	0.22
2017 orig.	3.37	36.07	2.70	25.84	10.70	9.55
2017 orig. MOE	0.04	1.47	0.03	1.04	0.40	0.37
2017 adj.		38.98		28.49	11.57	10.53
2017 adj. MOE		1.41		1.16	0.41	0.42

Note:

- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here excludes them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- Household VMT and PMT "adjusted" includes estimates of miles in all vehicles, including "18" Rental Car.

Table 4 compares key survey variables for each NPTS survey with external sources.

Table 4. Comparison of Survey Variables with Other Sources (Numbers in Thousands, Except VMT [millions])

Category	Households	Population	Licensed Drivers	Workers	Vehicles	VMT
	1969					
Other Sources	61,806	199,145	108,306		89,174	
1969 NPTS	62,504	197,213	102,986		72,500	
	1977					
Other Sources	74,142	218,106	138,121		132,155	
1977 NPTS	75,412	213,141	127,552		120,098	
	1983					
Other Sources	83,918	232,086	154,389		152,070	1,652,788
1983 NPTS	85,371	229,453	147,015		143,714	1,002,139
	1990					
Other Sources	91,947	247,826	167,015	125,840	172,902	2,144,362
1990 NPTS	93,347	239,416	163,025	118,343	165,221	1,695,290
	1995					
Other Sources	97,386	261,538	176,628	132,300	180,735	2,139,307
1995 NPTS	98,990	259,994	176,330	131,697	176,067	2,068,368
	2001					
Other Sources	108,209	285,318	191,276	143,730	205,551	2,494,951
2001 NHTS	107,365	277,203	186,280	142,850	202,586	2,274,769
	2009					
Other Sources	117,181	307,007	208,321	154,140	231,490	2,562,305
2009 NHTS	112,520	299,802	211,270	151,370	216,056	2,245,111
	2017					
Other Sources	118,208	321,419	218,084	151,144	231,490	2,638,583
2017 NHTS	118,208	321,419	223,277	156,988	222,579	2,105,882
2017 NHTS (adj)						2,431,558

Note:

Please see previous *Summary of Travel Trends* publications for the sources used for comparisons to prior surveys.
Other Sources for 2017 Comparisons:
Households - Census QuickFacts Table US Households 2012-2016
https://www.census.gov/quickfacts/fact/table/US/HSD410215#viewtop
Population - Population in Occupied Housing Units, estimate 2016
https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml
Drivers - 2015 estimate from Highway Statistics Table DL-22
https://www.fhwa.dot.gov/policyinformation/statistics/2015/dl22.cfm
Workers - Source: 2016 American Community Survey 1-year estimate, Table B18120
https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

Vehicles and VMT - Light Duty Vehicles (short WB) plus Motorcycles plus (based on the 2002 VIUS) 85.6% of Light Duty Vehicles with wheelbases (WB) larger than 121 inches)
http://www.fhwa.dot.gov/policyinformation/statistics/2015/vm1.cfm

3.0 HOUSEHOLD TRAVEL

Overall, households generated about the same person miles of travel in 2017 (Table 5a) compared to the 2009 estimate, but fewer person trips (Table 5c). The person miles of travel–overall and for most trip purposes–were statistically the same between 2009 for both the original and adjusted estimates for 2017. The exception was person miles of travel for social and recreational purposes, which were significantly lower in the original 2017 estimate.

The fact that the number of reported trips is lower while the total miles of travel is about the same as previous surveys could be an artifact of the shift away from interviewer-aided surveys to self-reported travel on the web. Without the aid of an interviewer, people may forget to report incidental stops and other short trips that impact the estimate of trips more than the estimate of miles of travel.

Table 5a. Trends in the Average Annual Person Miles of Travel per Household by Trip Purpose

	Average Annual PMT per Household							
Trip Purpose	All Purposes	To / From Work	Work Related Business	Shopping	Other Family / Personal Errands	School / Church	Social / Recreation	Other
1983	22,802	4,586	1,354	2,567	3,311	1,522	8,964	500
1990	30,316	5,637	1,043	3,343	7,167	1,599	11,308	214
1995	34,459	7,740	1,987	4,659	7,381	1,973	10,571	131
2001	35,244	6,706	2,987	4,887	6,671	2,060	10,586	1,216
2009	33,004	6,256	2,078	4,620	5,134	2,049	9,989	2,878
2009 MOE	1,235.1	170.1	247.2	181.4	222.8	123.0	585.8	864.6
2017 Orig.	33,587	6,259	1,326	4,122	4,469	2,189	8,964	6,260
2017 Orig. MOE	1,276.2	204.6	326.0	343.3	253.6	394.0	362.3	971.4
2017 Adj.	36,302	6,678	1,399	4,578	4,939	2,396	9,883	6,429
2017 Adj. MOE	1,315.0	217.3	330.0	378.2	280.0	437.8	386.8	960.7

Note

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- “Other Family/Personal Errands” includes trips such as to the post office, dry cleaners, or library
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.

Table 5b. Trends in the Average Person Trip Length by Trip Purpose

Trip Purpose	Average Person Trip Length (miles)							
	All Purposes	To / From Work	Work Related Business	Shopping	Other Family / Personal Errands	School / Church	Social / Recreation	Other
1983	8.7	8.5	21.8	5.4	7.3	4.9	12.3	8.2
1990	9.5	10.7	28.2	5.4	8.6	5.4	13.2	10.3
1995	9.1	11.6	20.3	6.1	7.6	6.0	11.3	22.8
2001	10.0	12.1	28.3	7.0	7.8	6.0	11.4	43.1
2009	9.7	11.8	20.0	6.5	7.0	6.3	10.7	51.5
2009 MOE	0.4	0.3	2.0	0.2	0.3	0.3	0.6	14.5
2017 Orig.	10.7	11.5	25.9	7.1	7.1	6.4	10.4	49.1
2017 Orig. MOE	0.4	0.3	6.4	0.5	0.3	1.2	0.5	7.3
2017 Adj.	11.6	12.2	27.4	7.9	7.9	7.0	11.4	50.4
2017 Adj. MOE	0.4	0.4	6.5	0.6	0.3	1.4	0.5	7.2

Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- “Other Family/Personal Errands” includes trips such as to the post office, dry cleaners, or library
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.

While the 2017 estimates of the number of person trips for work and school/church are statistically the same as in 2009 and 2001, the 2017 survey shows a significant decrease in the number of person trips for three major purposes: shopping, family and personal errands, and social and recreational travel.

There may also be a change in trip-making for shopping, family errands, and social and recreational travel. This is a large, catch-all category of purposes that may be affected by changes in on-line shopping and other electronic communication. Further research into the specific and detailed trends of changes in trip-making by purpose, including changes in trip-chaining, would be useful.

Table 5c. Trends in the Average Annual Person Trips per Household by Trip Purpose

Trip Purpose	Average Annual Person Trips per Household							
	All Purposes	To / From Work	Work Related Business	Shopping	Other Family / Personal Errands	School / Church	Social / Recreation	Other
1983	2,628	537	62	474	456	310	728	61
1990	3,262	539	38	630	854	304	874	22
1995	3,828	676	100	775	981	337	953	6
2001	3,581	565	109	707	863	351	952	30
2009	3,466	541	106	725	748	333	952	61
2009 MOE	31.8	7.9	7.4	14.6	13.9	9.8	14.1	4.1
2017 Orig.	3,140	546	51	580	628	341	866	128
2017 Orig. MOE	37.2	11.3	3.5	14.1	13.8	8.1	22.0	3.1

Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- “Other Family/Personal Errands” includes trips such as to the post office, dry cleaners, or library
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.

Tables 6a and 6b display trends in the average annual vehicle miles of travel and average trip length by select trip purposes.

The original (unadjusted) 2017 estimates of overall VMT per household is statistically lower than 2009, while the adjusted estimate is about the same—within the margin of error of the 2009 estimate. While nominally lower, the VMT per household for shopping is within range of the earlier estimates. However, the estimates of VMT per household in 2017 for errands and social/recreational travel are statistically lower than the 2001 estimates for the same purposes.

Using the adjusted estimates of vehicle miles of travel increases the estimate of VMT per household to be about the same as the 2009 estimates (within the margin of error) overall and for all trip purposes. For more information on the trip length adjustment, see Appendix A.

Table 6a. Trends in the Average Annual Vehicle Miles of Travel by Selected Trip Purposes

Trip Purpose	Average Annual VMT per Household				
	All Purposes	To / From Work	Shopping	Other Family / Personal Errands	Social / Recreation
1969	12,423	4,183	929	1,270	4,094
1977	12,036	3,815	1,336	1,444	3,286
1983	11,739	3,538	1,567	1,816	3,534
1990	18,161	4,853	2,178	4,250	5,359
1995	20,895	6,492	2,807	4,307	4,764
2001	21,187	5,724	3,062	3,956	5,186
2009	19,850	5,513	2,979	3,515	4,842
2009 MOE	490.5	146.7	95.9	120.1	257.8
2017 Original	17,815	5,379	2,618	2,982	4,327
2017 Orig. MOE	745.4	192.3	304.3	217.0	182.3
2017 Adjusted	19,641.8	5,773.9	2,919.9	3,325.2	4,825.5
2017 Adj. MOE	829.6	206.5	339.3	241.9	203.2

Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- “Other Family/Personal Errands” includes trips such as to the post office, dry cleaners, or library
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.

Table 6b. Trends in the Average Trip Length by Selected Trip Purposes

Trip Purpose:	Average Vehicle Trip Length (miles)				
	All Purposes	To / From Work	Shopping	Other Family / Personal Errands	Social / Recreation
1969	8.9	9.4	4.4	6.5	13.1
1977	8.4	9.0	5.0	6.7	10.3
1983	7.9	8.6	5.3	6.7	10.6
1990	8.9	11.0	5.1	7.4	11.8
1995	9.1	11.8	5.6	6.9	11.2
2001	9.9	12.1	6.7	7.5	11.9
2009	9.7	12.2	6.4	7.1	11.2
2009 MOE	0.2	0.3	0.2	0.2	0.6
2017 Original	9.6	12.0	7.0	6.9	10.6
2017 Orig. MOE	0.4	0.4	0.8	0.4	0.4
2017 Adjusted	10.5	12.8	7.9	7.7	11.8
2017 Adj. MOE	0.4	0.4	0.8	0.4	0.4

Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- “Other Family/Personal Errands” includes trips such as to the post office, dry cleaners, or library
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.

Following the trends in person trips, in 2017, a typical household generated significantly fewer vehicle trips than in 2009 (Table 6c). While the 2017 estimates of the number of vehicle trips for work and school/church are statistically the same as in 2009 and 2001, the 2017 survey shows a significant decrease in the number of vehicle trips for three major purposes: shopping, family and personal errands, and social and recreational travel.

The original estimates of vehicle miles overall and for most purposes (except commuting) are statistically lower in 2017 compared to 2009. The adjustment for vehicle miles of travel brings the estimates into the same range as the 2009 estimates (within the margin of error). For more information on the trip length adjustment, see Appendix A.

The fact that the number of reported vehicle trips is lower while the total (adjusted) vehicle miles of travel (Table 6a) is about the same as previous surveys could be an artifact of the shift away from interviewer-aided surveys to self-reported travel on the web. Without the aid of an interviewer, people may forget to report incidental stops and other short trips that impact the estimate of trips more than the estimate of miles of travel.

However, there may also be a change in trip-making for shopping, family errands, and social and recreational travel. This is a large, catch-all category of purposes that may be affected by changes in on-line shopping and other electronic communication. Further research into the specific and detailed trends of changes in trip-making by purpose, including trip-chaining, would be enlightening.

Table 6c. Trends in the Average Annual Vehicle Trips per Household by Selected Trip Purposes

Trip Purpose	Average Annual Vehicle Trips per Household				
	All Purposes	To / From Work	Shopping	Other Family / Personal Errands	Social / Recreation
1969	1,396	445	213	195	312
1977	1,442	423	268	215	320
1983	1,486	414	297	272	335
1990	2,077	448	431	579	460
1995	2,321	553	501	626	427
2001	2,171	479	459	537	441
2009	2,068	457	468	500	436
2009 MOE	20.8	7.8	9.2	9.2	8.4
2017 Original	1,865	450	372	434	410
2017 Orig. MOE	21.7	9.6	10.2	11.0	10.6

Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- “Other Family/Personal Errands” includes trips such as to the post office, dry cleaners, or library
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.

Table 7 displays the trends in average annual person trips per household by mode of transportation and metropolitan statistical area (MSA) size. Future surveys will tell if there is a shift to using public transit instead of private vehicles.

Table 7. Trends in the Average Annual Person Trips per Household by Mode of Transportation and MSA Size

MSA Size	1977	1983	1990	1995	2001	2009	2009 MOE	2017	2017 MOE
Private Vehicle									
ALL	2,351	2,152	2,861	3,307	3,090	2,892	30	2,592	30
Not in MSA	2,436	2,322	2,837	3,492	3,076	2,898	72	2,623	81
Less than 250,000	2,517	2,375	3,090	3,503	3,304	2,980	118	2,620	123
250,000 - 499,999	2,574	2,443	3,014	3,472	3,251	2,950	141	2,718	122
500,000 - 999,999	2,628	2,140	2,957	3,509	3,348	3,020	144	2,698	73
1,000,000 - 2,999,999	2,366	2,031	2,986	3,354	3,174	2,951	74	2,678	89
3,000,000 and above	1,785	1,691	2,649	3,075	2,911	2,793	50	2,446	37
Public Transit									
ALL	73	60	58	67	58	66	4	80	4
Not in MSA	22	11	14	9	6	4	2	6	2
Less than 250,000	47	17	30	23	12	14	8	33	8
250,000 - 499,999	44	23	22	18	18	15	7	34	12
500,000 - 999,999	58	48	33	33	11	41	17	42	9
1,000,000 - 2,999,999	86	67	52	37	36	39	8	50	9
3,000,000 and above	189	181	124	137	128	148	11	170	8
Walk									
ALL	261	226	234	205	309	362	13	329	14
Not in MSA	199	211	175	134	221	239	17	204	36
Less than 250,000	241	280	212	138	248	270	48	217	18
250,000 - 499,999	206	199	203	152	251	268	23	228	33
500,000 - 999,999	256	184	161	138	224	314	52	274	20
1,000,000 - 2,999,999	295	179	207	162	275	313	20	303	26
3,000,000 and above	396	330	337	301	423	514	29	479	16
ALL Modes									
ALL	2,808	2,628	3,262	3,828	3,581	3,466	32	3,140	37
Not in MSA	2,800	2,766	3,151	3,878	3,435	3,275	77	2,966	85
Less than 250,000	2,944	2,889	3,450	3,926	3,678	3,395	128	2,984	128
250,000 - 499,999	2,945	2,891	3,340	3,894	3,645	3,356	144	3,103	128
500,000 - 999,999	3,049	2,542	3,252	3,916	3,692	3,529	151	3,141	79
1,000,000 - 2,999,999	2,861	2,463	3,344	3,795	3,602	3,446	78	3,178	100
3,000,000 and above	2,459	2,326	3,213	3,765	3,593	3,614	55	3,246	43

Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.

- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- "Rural, Not in MSA" includes only full counties designated as rural. There may also be rural pockets included within MSA boundaries.
- The population size groups for 1977 - 1983 NPTS are MSA size groups. 1990 - 2001 are MSA size groups. 2009 - 2017 are Consolidated Metropolitan Statistical Area (CMSA) size groups.
- Changes in walk trips throughout the data series could be a result, at least in part, to questionnaire changes: Recent NHTS surveys explicitly prompt respondents to include walk and bike trips, which was not the case in prior surveys. The 2017 NHTS changed the definition of a trip to allow walk and bike trips to and from hone (loop trips).
- Public transit includes local bus, commuter bus, commuter train, subway, trolley, and streetcar.

The data series in Table 8 shows that more income is related to more travel. The households in the highest income group annually produce 80 percent more person trips compared to households in the lowest income group.

The income categories in 2017 changed slightly from the 2009 and earlier surveys. The data here are shown in 2017 current dollars

The 2009 and earlier surveys were conducted with a telephone sample (landline only) which excluded CPO households. This was especially an issue in 2009, when an estimated 25 percent of all US households did not have a landline. Therefore, the 2009 sample may have under coverage of households with lower income. Care should be taken in interpreting trends of estimates that might be correlated to telephone ownership, such as household income.

Table 8. Trends in the Number of Annual Person Trips per Household by Household Income

Income	1990	1995	2001	2009	2009 MOE	2017	2017 MOE
ALL	3,262	3,828	3,793	3,466	31	3,140	37
Less than $15,000	2,298	2,525	2,272	2,200	99	2,214	112
$15,000 to $24,999	3,072	3,263	3,028	2,616	102	2,477	146
$25,000 to $34,999	3,685	3,914	3,411	3,018	112	2,756	94
$35,000 to $49,999	4,214	4,483	4,015	3,278	110	2,979	134
$50,000 to $74,999	4,549	4,710	4,761	3,967	100	3,172	81
$75,000 to $99,999	4,537	4,910	5,214	4,504	112	3,487	90
$100,000 and over	-	4,723	5,253	4,947	117	4,033	105

Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- The 2017 NHTS asked income in different categories than previous surveys, therefore this table will not match the *Summary of Travel Trends* 2009 and earlier
- In 1990 the highest income group was $80,000 and above
- Incomes for 1983, 1990, adjusted 1990, and 1995 have been adjusted to 2001 dollars: https://www.bls.gov/data/inflation_calculator.htm

4.0 PERSON TRAVEL

In 2017, the overall number of reported trips by private vehicle was significantly lower than the 2009 estimate. However, the declines were not equal across all purposes. For example, the estimate for the number of vehicle commutes and vehicle trips to school and church were statistically the same in 2017 compared to 2009 and previous years (within the margin of error). However, the reported total number of vehicle trips for shopping and errands was nominally closer to the 1990 estimate than any intervening year and a significant decline from the 2009 estimate.

On the other hand, the overall number of transit trips reported was significantly higher than the 2009 estimate, fueled by the significant increase in the number of reported commutes on transit. The estimate for the number of transit trips for all other purposes was statistically the same in 2017 compared to 2009.

The total number of walk trips reported was statistically within the margin of error of the 2009 estimate. The definition of a reported walk trip changed slightly to allow trips that begin and end at home, like walks for exercise. This change in definition impacts the total estimate of walks and requires more investigation.

But it should be noted that the common thread is an overall decline in reported trips for shopping and errands. This category of trip purposes is a large, catch-all category of trip-making that may be affected by many competing factors: For example, some of the difference in reported trips in 2017 NHTS may be a result of moving to a self-completed questionnaire compared to interview-assisted in previous surveys. Interviewers are trained to prompt for short stops and under-reported trips.

There may also be changes in trip-making for shopping and errands related to on-line purchasing. Other demographic trends, such as shifts in the percentage of households with children, may also be a factor. It would be helpful to conduct further research into the specific and detailed trends of changes in trip-making by purpose, including trip-chaining.

The Table 9 series displays these findings.

Table 9a. Trends in the Annual Number (millions) of Person Trips by Mode of Transportation and Trip Purpose

Category	Private Vehicle					
	To/ From Work	Work-Related Business	Shopping and Errands	School or Church	Social and Recreational	Other
1990	45,856	3,178	128,368	17,545	70,382	1,629
1995	60,740	8,835	156,065	22,436	78,809	470
2001	56,054	10,648	153,270	26,861	82,437	2,147
2009	55,969	10,525	146,158	26,654	82,887	4,925
2009 MOE	941.4	767.1	2487.7	968.2	1583.2	304.1
2017	56,981	4,844	126,268	28,427	78,890	10,988
2017 MOE	1276.6	272.7	1343.8	990.0	2262.4	400.8
Category	Public Transit					
	To/ From Work	Work-Related Business	Shopping and Errands	School or Church	Social and Recreational	Other
1990	1,992	92	1,318	1,076	946	35
1995	2,328	123	2,000	826	1,350	11
2001	2,271	213	1,776	800	989	134
2009	2,247	264	2,344	829	1,426	409
2009 MOE	254.2	93.7	264.7	131.8	195.0	114.5
2017	3,537	208	2,586	1,009	1,618	487
2017 MOE	214.3	72.2	198.5	182.0	131.0	82.5

Table 9a. Trends in the Annual Number (millions) of Person Trips by Mode of Transportation and Trip Purpose (continued)

Category	Walk					
	To/ From Work	Work-Related Business	Shopping and Errands	School or Church	Social and Recreational	Other
1990	1,999	154	7,722	3,649	8,090	265
1995	1,510	240	8,756	2,925	6,845	47
2001	1,715	487	11,936	3,630	14,824	507
2009	1,854	684	15,174	3,542	18,833	874
2009 MOE	230.4	136.1	818.7	479.4	768.4	157.6
2017	2,523	510	11,496	4,146	18,483	1,790
2017 MOE	258.3	68.2	680.0	459.5	724.0	122.3
Category	**Other**					
	To/ From Work	Work-Related Business	Shopping and Errands	School or Church	Social and Recreational	Other
1990	428	95	1,087	6,086	2,098	73
1995	887	417	1,768	6,035	2,954	37
2001	584	317	1,468	6,351	3,829	394
2009	1,144	469	2,859	6,651	4,576	725
2009 MOE	166.1	169.2	337.3	413.1	387.4	135.1
2017	1,540	486	2,404	6,721	3,330	1,873
2017 MOE	184.4	139.6	296.1	294.8	309.0	274.4

Table 9a. Trends in the Annual Number (millions) of Person Trips by Mode of Transportation and Trip Purpose (continued)

Category	Total					
	To/ From Work	Work-Related Business	Shopping and Errands	School or Church	Social and Recreational	Other
1990	50,314	3,529	138,559	28,397	81,575	2,014
1995	66,901	9,860	173,764	33,355	94,362	623
2001	60,690	11,676	168,560	37,671	102,165	3,198
2009	61,214	11,943	166,535	37,676	107,722	6,933
2009 MOE	901.9	849.2	2536.5	1119.2	1617.9	468.3
2017	64,582	6,048	142,754	40,303	102,327	15,139
2017 MOE	1333.0	409.3	1469.3	955.6	2605.5	362.8

Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- "Other" trip purpose includes trips for work-related business and trips not categorized.

Table 9b. Trends in the Percent of Person Trips by Mode of Transportation and Trip Purpose (Millions)

Year	Private Vehicle						
	To/From Work	Work-Related Business	Shopping and Errands	School or Church	Social and Recreational	Other	Total
1990	91.2%	90.3%	92.7%	61.9%	86.3%	81.4%	87.8%
1995	92.8%	91.9%	92.6%	69.6%	87.6%	83.2%	89.3%
2001	92.4%	91.2%	90.9%	71.3%	80.7%	67.2%	86.3%
2009	91.4%	88.1%	87.8%	70.7%	76.9%	71.0%	83.4%
2017	88.2%	80.1%	88.5%	70.5%	77.1%	72.6%	82.6%
Year	**Public Transit**						
	To/From Work	Work-Related Business	Shopping and Errands	School or Church	Social and Recreational	Other	Total
1990	4.0%	2.6%	1.0%	3.8%	1.2%	1.7%	1.8%
1995	3.6%	1.3%	1.2%	2.6%	1.5%	1.9%	1.8%
2001	3.7%	1.8%	1.1%	2.1%	1.0%	4.2%	1.6%
2009	3.7%	2.2%	1.4%	2.2%	1.3%	5.9%	1.9%
2017	5.5%	3.4%	1.8%	2.5%	1.6%	3.2%	2.5%
Year	**Walk**						
	To/From Work	Work-Related Business	Shopping and Errands	School or Church	Social and Recreational	Other	Total
1990	4.0%	4.4%	5.6%	12.8%	9.9%	13.2%	7.2%
1995	2.3%	2.4%	5.0%	8.8%	7.3%	7.6%	5.4%
2001	2.8%	4.2%	7.1%	9.6%	14.5%	15.9%	8.6%
2009	3.0%	5.7%	9.1%	9.4%	17.5%	12.6%	10.4%
2017	3.9%	8.4%	8.1%	10.3%	18.1%	11.8%	10.5%

Table 9b. Trends in the Percent of Person Trips by Mode of Transportation and Trip Purpose (Millions) (continued)

Year	Other						
	To/From Work	Work-Related Business	Shopping and Errands	School or Church	Social and Recreational	Other	Total
1990	0.8%	2.7%	0.8%	21.4%	2.6%	3.6%	3.2%
1995	1.3%	4.2%	1.0%	18.1%	3.1%	6.0%	3.2%
2001	1.0%	2.7%	0.9%	16.9%	3.7%	12.3%	3.4%
2009	1.9%	3.9%	1.7%	17.7%	4.2%	10.5%	4.2%
2017	2.4%	8.0%	1.7%	16.7%	3.3%	12.4%	4.4%

Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B. .
- Changes in walk trips throughout the data series could be a result, at least in part, to questionnaire changes: Recent NHTS surveys explicitly prompt respondents to include walk and bike trips, which was not the case in prior surveys. The 2017 NHTS changed the definition of a trip to allow walk and bike trips to and from hone (loop trips).
- "Other" trip purpose includes trips for work-related business and trips not categorized.

The most striking gender difference in travel behavior is in the difference in the number of household-supporting trips taken by men and women.

Traditionally, women make many more trips for shopping and errands compared to men. Table 10a shows that these gender differences persist in the 2017 data. In the 2017 NHTS, women reported making more trips overall than men and more trips for shopping and family errands compared to men.

On the other hand, men reported more trips than women for work and for work-related business. Men and women reported about the same number of social and recreational trips (within the margin of error).

Continuing trends noted previously, both men and women took fewer trips on average in 2017 compared to the estimates for 2009 and 2001 (Table 10b). Men and women reported about 11 percent fewer trips in 2017 compared to 2009. Nearly all the decline in trip-making came from declines in the estimate of trips for shopping and errands.

Table 10a. Trends in the Annual Number of Person Trips per Person by Trip Purpose and Gender

Category	All						
	1990	1995	2001	2009	2009 MOE	2017	2017 MOE
TOTAL	1,371	1,568	1,469	1,385	16.1	1,231	15.7
To or From Work	210	257	219	216	4.7	214	4.7
Work Related Business	15	38	42	42	3.9	20	1.5
Shopping and Errands	579	668	608	588	11.4	473	5.2
School/Church	119	128	136	133	4.9	134	3.4
Social and Recreational	341	363	369	381	7.5	339	8.6
Other	8	2	12	24	2.2	50	1.2

Table 10a. Trends in the Annual Number of Person Trips per Person by Trip Purpose and Gender (continued)

	Men						
	1990	1995	2001	2009	2009 MOE	2017	2017 MOE
TOTAL	1,339	1,579	1,491	1,368	15.7	1,210	23.2
To or From Work	259	327	273	241	4.6	240	6.9
Work Related Business	21	60	66	58	5.2	25	2.4
Shopping and Errands	549	648	590	529	10.7	420	9.9
School/Church	123	134	141	128	5.3	132	4.3
Social and Recreational	377	406	405	386	7.9	335	10.9
Other	9	2	13	26	2.4	58	2.4

	Women						
	1990	1995	2001	2009	2009 MOE	2017	2017 MOE
TOTAL	1,401	1,558	1,494	1,401	16.4	1,251	16.0
To or From Work	197	229	200	193	4.7	189	4.5
Work Related Business	11	23	25	27	2.6	15	0.8
Shopping and Errands	693	786	715	646	12.1	525	10.4
School/Church	132	141	151	138	4.5	135	3.9
Social and Recreational	358	375	389	375	7.2	344	9.3
Other	9	3	12	23	2.0	42	2.5

Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- "Other" trip purpose includes trips for work-related business and trips not categorized.

Table 10b. Trends in the Percent of Person Trips per Person by Trip Purpose and Gender

Category	All				
	1990	1995	2001	2009	2017
TOTAL	100%	100%	100%	100%	100%
To or From Work	15.3%	16.4%	14.9%	15.6%	17.4%
Work Related Business	1.1%	2.4%	2.9%	3.0%	1.6%
Shopping and Errands	42.2%	42.6%	41.4%	42.5%	38.4%
School/Church	8.7%	8.2%	9.2%	9.6%	10.9%
Social and Recreational	24.9%	23.1%	25.1%	27.5%	27.5%
Other	0.6%	0.2%	0.8%	1.8%	4.1%
Category	**Men**				
	1990	1995	2001	2009	2017
TOTAL	100%	100%	100%	100%	100%
To or From Work	19.3%	20.7%	18.3%	17.6%	19.8%
Work Related Business	1.6%	3.8%	4.4%	4.2%	2.1%
Shopping and Errands	41.0%	41.0%	39.6%	38.7%	34.7%
School/Church	9.2%	8.5%	9.5%	9.4%	10.9%
Social and Recreational	28.2%	25.7%	27.2%	28.2%	27.7%
Other	0.7%	0.1%	0.9%	1.9%	4.8%

Table 10b. Trends in the Percent of Person Trips per Person by Trip Purpose and Gender (continued)

Category	Women				
	1990	1995	2001	2009	2017
TOTAL	100%	100%	100%	100%	100%
To or From Work	14.1%	14.7%	13.4%	13.8%	15.1%
Work Related Business	0.8%	1.5%	1.7%	1.9%	1.2%
Shopping and Errands	49.5%	50.4%	47.9%	46.1%	42.0%
School/Church	9.4%	9.1%	10.1%	9.9%	10.9%
Social and Recreational	25.6%	24.1%	26.0%	26.8%	27.5%
Other	0.6%	0.2%	0.8%	1.6%	3.4%

Note:

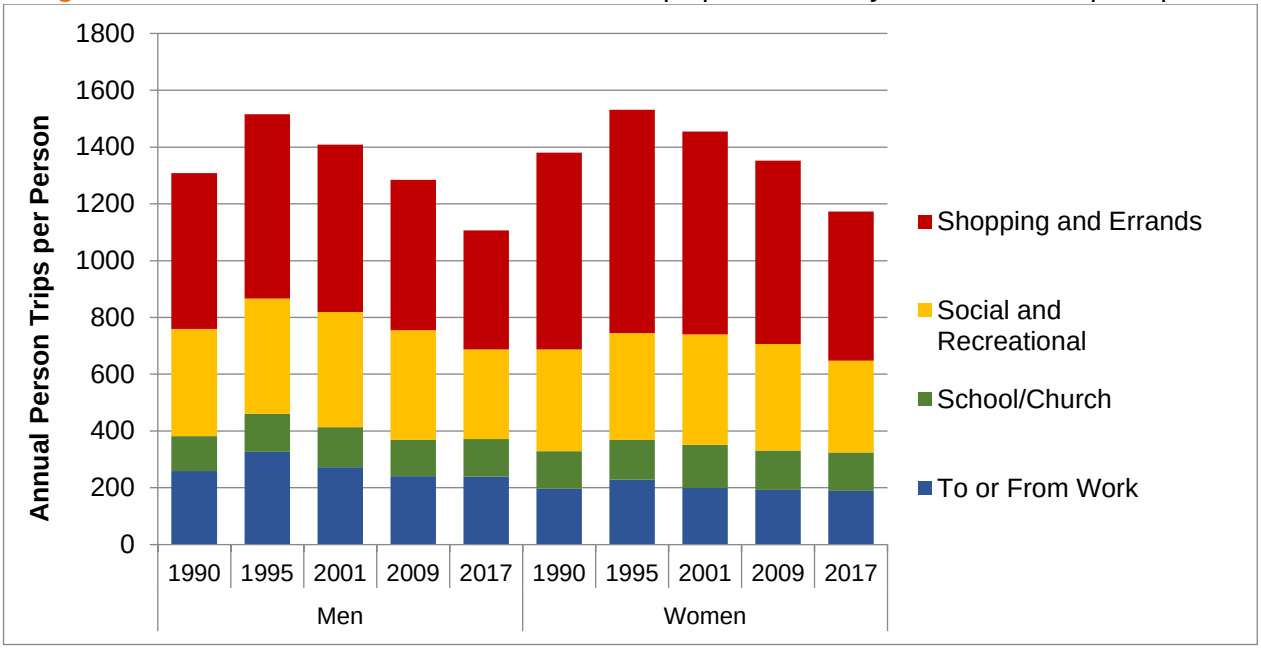
- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- "Other" trip purpose includes trips for work-related business and trips not categorized.

Figure 2 shows the estimate of the number of annual person trips by purpose for men and women from 1990 to 2017. The decline in the total number of trips per person since 1995 appears to be mostly due to declines in the estimate of trips for shopping and errands.

Interestingly, both men and women report about one-third fewer trips for shopping and errands in 2017 compared to 1995. However, in 2017, women still reported making about 25 percent more shopping and errand trips than men.

The category of trip purposes called “shopping and errands” is a large, catch-all category of purposes that may be affected by the change in methods (e.g., self-reports on the web may under-report incidental stops) and may also be affected by increases in online shopping as well as shifts in the number of households with children. It would be enlightening to conduct further research into the specific and detailed changes in trip-making by purpose, including trip-chaining.

Figure 2. Trends in the Distribution of Person Trips per Person by Gender and Trip Purpose



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- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- "Other" trip purpose includes trips for work-related business and trips not categorized.

In 2017, the person trip rates overall were lower than the 2009 estimates (Table 11). It is interesting to note that not all trip purposes declined at the same rate. For example, the estimate for the number of trips to and from work and trips to school and church were statistically the same in 2017 compared to 2009 and previous years.

The majority of the decline in trip-making came from lower estimates for daily trips for shopping and family errands. The estimate for the number of daily trips for shopping and errands declined from 1.61 in 2009 to 1.31 in 2017. This follows a decline from 2001-2009 (from 1.79 to 1.61), which follows a decline from 1995-2001 from 1.97 to 1.79).

This is a large, catch-all category of purposes that may be affected by the change in methods (e.g., self-reports on the web may under-report incidental stops) and may also be affected by changes in online shopping as well as shifts in the number of households with children. It would be enlightening to conduct further research into the specific and detailed trends of changes in trip-making by purpose, including trip-chaining.

In terms of miles of travel, the results are also mixed. The average daily miles travelled for work, school, and church were statistically lower for all purposes when measured via the shortest path. However, with the adjusted factors applied, the average daily miles were significantly higher for shopping and errands and for social and recreational travel in 2017 compared to 2009. Details about the mileage estimate obtained in the 2017 NHTS is in Appendix A.

Table 11. Trends in the Daily Trip Rates and Person Miles of Travel per Person by Trip Purpose

	Survey Year	Total	To / From Work	Shopping / Errands	School / Church	Social / Recreation
Person Trips per Day	1977	2.92	0.57	0.91	0.35	0.71
	1983	2.89	0.59	1.02	0.34	0.8
	1990	3.76	0.62	1.71	0.35	1.01
	1995	4.30	0.76	1.97	0.38	1.07
	2001	4.09	0.65	1.79	0.4	1.09
	2009	3.79	0.59	1.61	0.36	1.04
	2009 MOE	0.03	0.01	0.02	0.01	0.02
	2017	3.37	0.59	1.30	0.37	0.93
	2017 MOE	0.04	0.01	0.01	0.01	0.02
	Survey Year	**Total**	**To / From Work**	**Shopping / Errands**	**School / Church**	**Social / Recreation**
Person Miles per Day	1977	25.95	5.16	5.68	1.61	7.81
	1983	25.05	5.04	6.46	1.67	9.85
	1990	34.91	6.49	12.1	1.84	13.02
	1995	38.67	8.69	13.51	2.21	11.86
	2001	40.25	7.66	13.2	2.35	12.09
	2009	36.13	6.85	10.68	2.24	10.93
	2009 MOE	1.35	0.19	0.31	0.13	0.64
	2017 Orig.	36.07	6.72	9.22	2.35	9.63
	2017 Orig. MOE	1.47	0.24	0.50	0.45	0.39
	2017 Adj	38.98	7.17	10.22	2.57	10.61
	2017 Adj. MOE	1.41	0.23	0.51	0.47	0.42

Note:

- Totals in all tables can include cases that were not included in any table subcategory.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- The 2017 estimates of vehicle trip length have an adjusted value to account for different methods in trip length reporting, see Appendix A.
- "Other" trip purpose includes trips for work-related business and trips not categorized.
- Trip rates are calculated including travelers and non-travelers, resulting in travel estimates per-capita.

Figures 3a and 3b and Tables 12 and 13 display daily trip and person rates and person miles of travel and show a decline in overall trip-making.

Figure 3a. Daily Trip Rates per Person by Trip Purpose

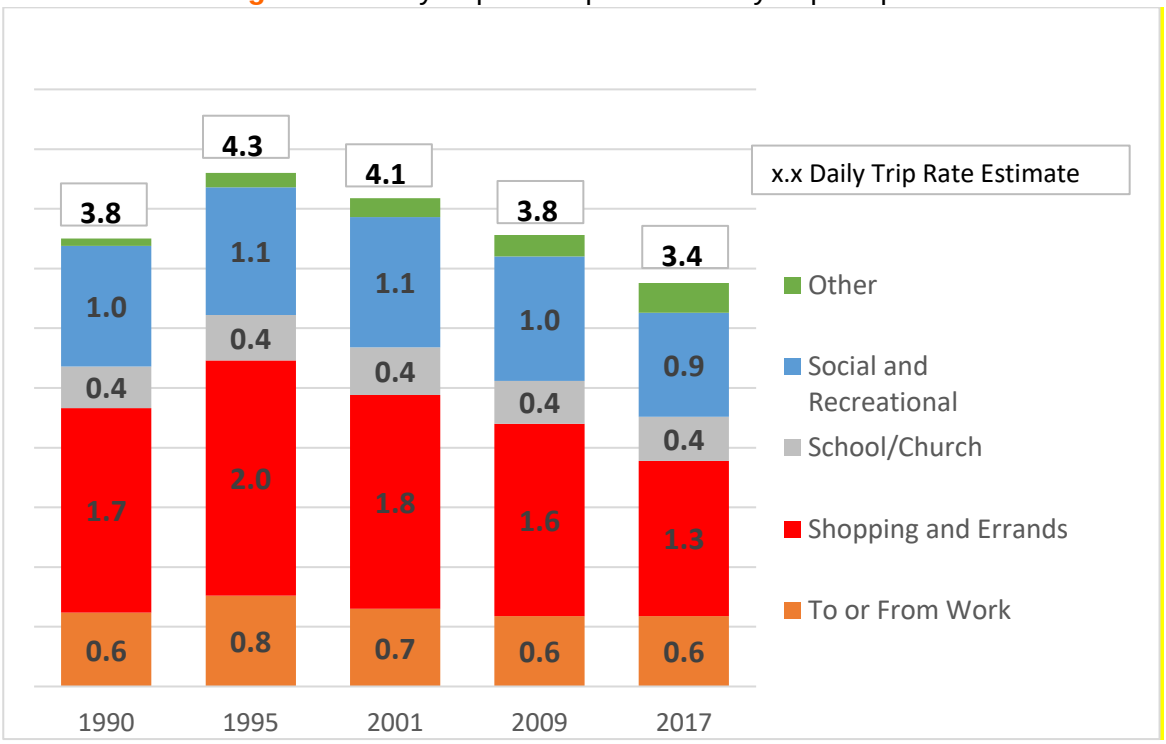

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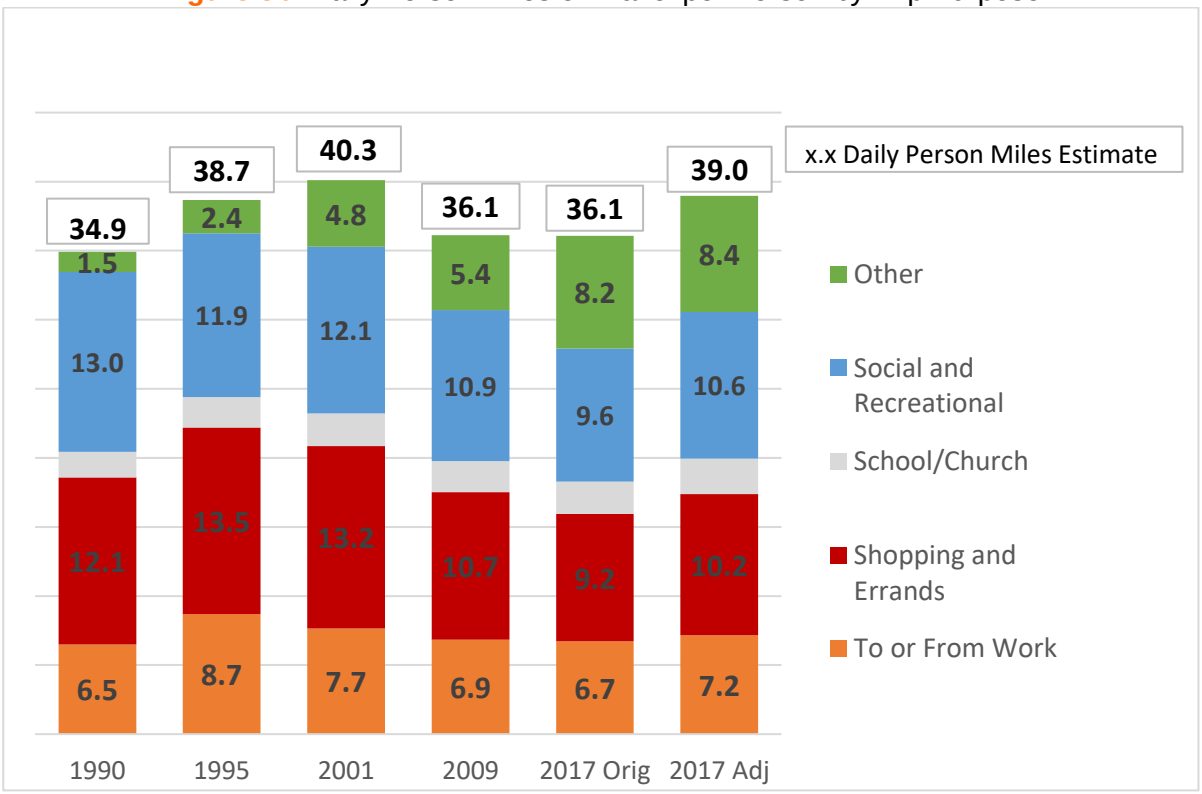
Figure 3b. Daily Person Miles of Travel per Person by Trip Purpose



Note:

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- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- The 2017 estimates of vehicle trip length have an adjusted value to account for different methods in trip length reporting, see Appendix A.
- "Other" trip purpose includes trips for work-related business and trips not categorized.

Table 12. Trends in the Distribution of Daily Person Miles of Travel per Person by Mode of Transportation and Trip Purpose

Category	Private Vehicle								
	1990	1995	2001	2009	2009 MOE	2017 Orig.	2017 Orig. MOE	2017 Adj.	2017 Adj. MOE
TOTAL	30.85	35.26	35.49	31.92	0.88	27.54	0.80	30.45	0.83
Percent	88.4%	91.2%	88.2%	88.3%		76.4%		78.1%	
To or From Work	6.15	8.09	7.11	6.47	0.17	6.13	0.21	6.58	0.22
Percent	17.6%	20.9%	17.7%	17.9%		17.0%		16.9%	
Work-Related Business	0.63	1.85	2.27	1.88	0.21	0.68	0.06	0.76	0.07
Percent	1.80%	4.78%	5.64%	5.20%		1.89%		1.95%	
Shopping and Errands	11.39	12.7	12.77	10.30	0.32	8.65	0.45	9.64	0.50
Percent	32.6%	32.8%	31.7%	28.5%		24.0%		24.7%	
School/Church	1.32	1.68	1.87	1.80	0.13	1.93	0.41	2.15	0.46
Percent	3.78%	4.34%	4.65%	4.98%		5.35%		5.52%	
Social and Recreational	11.12	10.83	11.01	9.98	0.52	8.57	0.42	9.56	0.47
Percent	31.9%	28.0%	27.4%	27.6%		23.8%		24.5%	
Other	0.23	0.10	0.36	1.49	0.35	1.58	0.20	1.76	0.22
Percent	0.66%	0.26%	0.89%	4.12%		4.38%		4.52%	

Table 12. Trends in the Distribution of Daily Person Miles of Travel per Person by Mode of Transportation and Trip Purpose (continued)

Category	Public Transit								
	1990	1995	2001	2009	2009 MOE	2017 Orig.	2017 Orig. MOE	2017 Adj.	2017 Adj. MOE
TOTAL	0.74	0.82	0.47	0.53	0.11	0.94	0.10	0.94	0.10
Percent	2.1%	2.1%	1.2%	1.5%		2.6%		2.4%	
To or From Work	0.27	0.30	0.24	0.18	0.04	0.39	0.04	0.39	0.04
Percent	0.77%	0.78%	0.60%	0.50%		1.08%		1.00%	
Work-Related Business	0.01	0.02	0.01	0.02	0.01	0.06	0.05	0.06	0.05
Percent	0.03%	0.05%	0.02%	0.06%		0.17%		0.15%	
Shopping and Errands	0.14	0.19	0.10	0.10	0.02	0.17	0.02	0.17	0.02
Percent	0.40%	0.49%	0.25%	0.28%		0.47%		0.44%	
School/Church	0.12	0.07	0.04	0.05	0.01	0.07	0.01	0.07	0.01
Percent	0.34%	0.18%	0.10%	0.14%		0.19%		0.18%	
Social and Recreational	0.18	0.24	0.07	0.10	0.03	0.18	0.06	0.18	0.06
Percent	0.52%	0.62%	0.17%	0.28%		0.50%		0.46%	
Other	0.01	0.00	0.00	0.08	0.09	0.08	0.02	0.08	0.02
Percent	0.03%	0.00%	0.00%	0.22%		0.22%		0.21%	

Table 12. Trends in the Distribution of Daily Person Miles of Travel per Person by Mode of Transportation and Trip Purpose (continued)

Category	Other Means								
	1990	1995	2001	2009	2009 MOE	2017 Orig.	2017 Orig. MOE	2017 Adj.	2017 Adj. MOE
TOTAL	3.31	2.2	4.10	3.68	0.96	7.58	1.24	7.58	1.24
Percent	9.5%	5.7%	10.2%	10.2%		21.0%		19.4%	
To or From Work	0.06	0.22	0.30	0.20	0.09	0.20	0.06	0.20	0.06
Percent	0.17%	0.57%	0.75%	0.55%		0.55%		0.51%	
Work-Related Business	0.56	0.34	1.12	0.38	0.15	0.69	0.32	0.69	0.32
Percent	1.60%	0.88%	2.78%	1.05%		1.91%		1.77%	
Shopping and Errands	0.57	0.49	0.32	0.28	0.04	0.41	0.16	0.41	0.16
Percent	1.63%	1.27%	0.80%	0.77%		1.14%		1.05%	
School/Church	0.40	0.44	0.44	0.40	0.03	0.35	0.05	0.35	0.05
Percent	1.15%	1.14%	1.09%	1.11%		0.97%		0.90%	
Social and Recreational	1.71	0.66	1.01	0.85	0.35	0.88	0.42	0.88	0.42
Percent	4.90%	1.71%	2.51%	2.35%		2.44%		2.26%	
Other	0.01	0.05	0.87	1.57	0.87	5.06	1.16	5.06	1.16
Percent	0.0%	0.1%	2.2%	4.3%		14.0%		13.0%	

Table 12. Trends in the Distribution of Daily Person Miles of Travel per Person by Mode of Transportation and Trip Purpose (continued)

Category	Total								
	1990	1995	2001	2009	2009 MOE	2017 Orig.	2017 Orig. MOE	2017 Adj.	2017 Adj. MOE
TOTAL	34.91	38.67	40.25	36.13	1.35	36.07	1.37	38.98	1.41
Percent	100%	100%	100%	100%		100%		100%	
To or From Work	6.49	8.69	7.66	6.85	0.19	6.72	0.22	7.17	0.23
Percent	18.6%	22.5%	19.0%	19.0%		18.6%		18.4%	
Work-Related Business	1.20	2.23	3.41	2.28	0.27	1.42	0.35	1.5	0.35
Percent	3.44%	5.77%	8.47%	6.31%		3.94%		3.85%	
Shopping and Errands	12.10	13.51	13.2	10.68	0.31	9.22	0.46	10.22	0.51
Percent	34.7%	34.9%	32.8%	29.6%		25.6%		26.2%	
School/Church	1.84	2.21	2.35	2.24	0.13	2.35	0.42	2.57	0.47
Percent	5.27%	5.72%	5.84%	6.20%		6.52%		6.59%	
Social and Recreational	13.02	11.86	12.09	10.93	0.64	9.63	0.39	10.61	0.42
Percent	37.3%	30.7%	30.0%	30.3%		26.7%		27.2%	
Other	0.25	0.15	1.39	3.15	0.95	6.72	1.04	6.9	1.03
Percent	0.7%	0.4%	3.5%	8.7%		18.6%		17.7%	

Note

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- 1990 NPTS data were adjusted to make them more comparable with later surveys.

- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- In 2001, the mode "Bus" was divided into "Local Public Transit Bus," "Commuter Bus," "Charter/Tour Bus," and "City to City Bus." Only "Local Public Transit Bus" and "Commuter Bus" are included in public transit calculations.
- Increases in walk trips between 2001 and 2017 are due, at least in part, to questionnaire changes: recent NHTS surveys explicitly ask respondents to include walk and bike trips, which was not the case in prior surveys.
- In 2017, walk and bike trips were sometimes reported as Home-Home loops (single round trips). In prior surveys, “loop” trips were coded to the farthest destination and reported as two trips: outbound and return.
- The 2017 estimates of vehicle trip length have an adjusted value to account for different methods in trip length reporting, see Appendix A.
- "Other" trip purpose includes trips for work-related business and trips not categorized.
- Percentages are a percent of total daily person miles of travel.

Table 13. Trends in the Average Daily Person Trips per Person by Age and Gender

Age	Total							
	1983	1990	1995	2001	2009	2009 MOE	2017	2017 MOE
TOTAL	2.9	3.8	4.3	4.1	3.8	0.03	3.4	0.04
Under 16	2.3	3.1	3.7	3.4	3.2	0.07	2.8	0.06
16 to 20	3.3	4.2	4.6	4.1	3.5	0.11	2.8	0.08
21 to 35	3.5	4.4	4.6	4.3	3.9	0.09	3.4	0.10
36 to 65	2.9	3.9	4.6	4.5	4.2	0.05	3.7	0.03
Over 65	1.8	2.4	3.4	3.4	3.2	0.07	3.2	0.04
Age	**Men**							
	1983	1990	1995	2001	2009	2009 MOE	2017	2017 MOE
TOTAL	2.9	3.7	4.3	4.1	3.7	0.04	3.3	0.06
Under 16	2.3	3	3.7	3.5	3.2	0.09	2.8	0.07
16 to 20	3.2	4.2	4.6	4.0	3.3	0.13	2.8	0.13
21 to 35	3.4	4.2	4.5	4.2	3.7	0.11	3.2	0.10
36 to 65	2.9	3.7	4.6	4.4	4.1	0.06	3.6	0.06
Over 65	2.2	2.8	3.9	3.8	3.5	0.10	3.4	0.05
Age	**Women**							
	1983	1990	1995	2001	2009	2009 MOE	2017	2017 MOE
TOTAL	2.9	3.8	4.3	4.1	3.8	0.04	3.4	0.04
Under 16	2.3	3.1	3.8	3.4	3.2	0.10	2.8	0.07
16 to 20	3.4	4.2	4.7	4.2	3.7	0.15	2.8	0.12
21 to 35	3.5	4.6	4.8	4.5	4.1	0.12	3.6	0.12
36 to 65	3	4.1	4.6	4.5	4.3	0.06	3.8	0.04
Over 65	1.5	2.2	3	3.1	2.9	0.09	3.0	0.06

Note:

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- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.

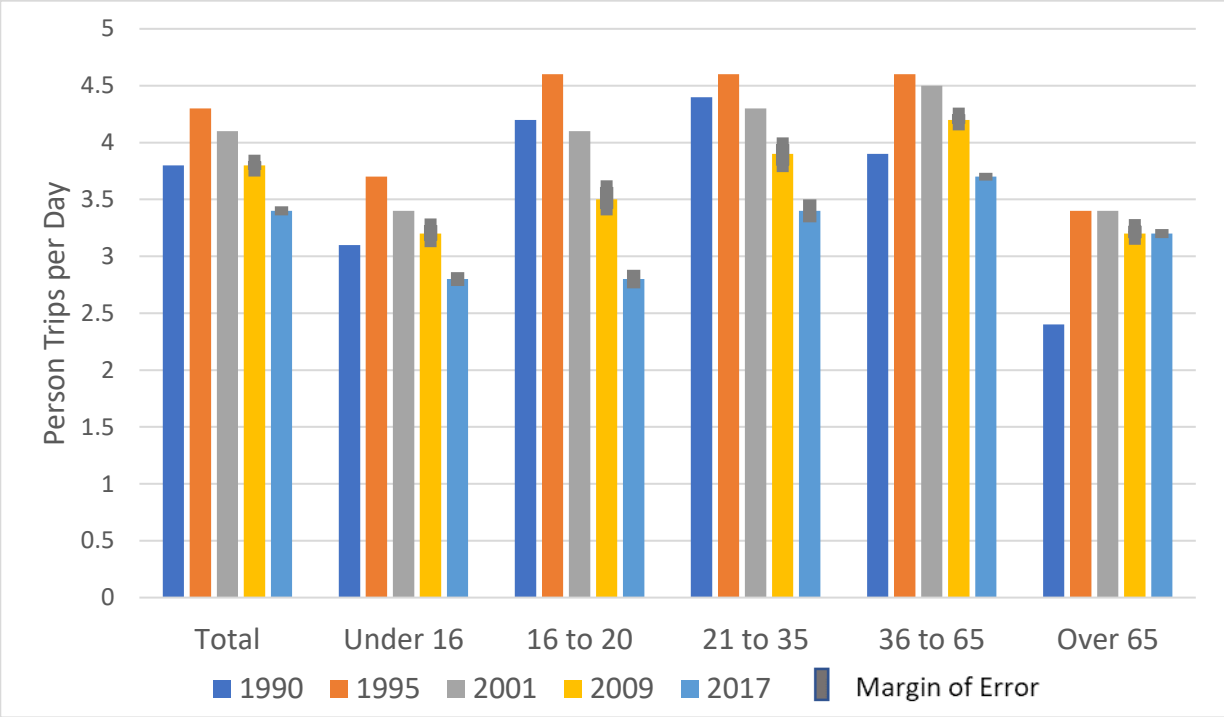
According to the 2017 NHTS estimates, all people younger than 65 reported significantly fewer trips in 2017 compared to 2009 (which was significantly lower than 2001, which was lower than 1995). Figure 4 shows that the 2017 estimate of person trips per person by age in these categories were lower than previous survey estimates, except for people aged 65 and older.

The data show that the decrease in trip-making was similar for both men and women, with men's trip-making declining by 21 percent and women's by 19 percent since 1995.

Some of the difference in reported trips in 2017 NHTS may be a result of moving to a self-completed questionnaire, compared to interview-assisted in previous surveys. For example, interviewers are trained to prompt for short stops and under-reported trips. Other factors, such as shifts related to online shopping may affect these estimates. Changes in household structure and other demographic trends may also play a role.

However, the trends over the last two decades clearly indicate that the NHTS estimates of overall trip-making are declining, with larger declines noted for younger people.

Figure 4. Trends in the Average Daily Person Trips by Age



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- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.

Table 14. Trends in the Average Daily Person Miles of Travel per Person by Age and Gender

Age	TOTAL									
	1983	1990	1995	2001	2009	2009 MOE	2017 Orig.	2017 Orig. MOE	2017 Adj.	2017 Adj. MOE
TOTAL	25.1	34.9	38.7	40.2	36.1	1.4	36.1	1.4	39.0	1.4
Under 16	16.2	20.1	25	24.5	25.3	3.5	22.9	2.8	24.9	3.0
16 to 20	22.2	34.4	36.4	38.1	29.5	1.8	27.3	2.0	29.6	2.2
21 to 35	31.1	44.3	46	45.6	37.7	1.9	41.4	5.7	44.6	6.1
36 to 65	29.2	40.1	45.1	48.8	44.0	1.9	41.7	1.6	44.9	1.7
Over 65	12.0	18.4	24.4	27.5	24.0	1.2	30.1	2.8	32.8	2.8
Age	**Men**									
	1983	1990	1995	2001	2009	2009 MOE	2017 Orig.	2017 Orig. MOE	2017 Adj.	2017 Adj. MOE
TOTAL	27.7	38.0	43.9	45.0	40.9	2.1	39.5	1.4	42.5	1.5
Under 16	16.8	20.3	23.7	24.6	27.2	6.3	25.6	4.8	27.7	5.1
16 to 20	23.0	36.9	37.6	34.1	28.2	2.3	25.9	3.1	28.0	3.2
21 to 35	32.8	48.2	51.3	49.8	40.5	2.8	42.9	5.4	46.0	5.5
36 to 65	33.6	43.4	53.2	57.7	50.9	3.0	47.1	2.3	50.6	2.3
Over 65	14.8	22.5	31.7	32.9	30.5	1.9	33.8	4.0	36.8	4.2

Table 14. Trends in the Average Daily Person Miles of Travel per Person by Age and Gender (continued)

Age	Women									
	1983	1990	1995	2001	2009	2009 MOE	2017 Orig.	2017 Orig. MOE	2017 Adj.	2017 Adj. MOE
TOTAL	22.6	32.1	33.8	35.7	31.5	1.0	32.8	1.8	35.6	2.0
Under 16	15.4	19.9	26.2	24.4	23.3	2.7	20.2	1.7	22.1	1.8
16 to 20	21.5	32.2	35	42.5	31.0	2.8	28.8	2.7	31.3	2.8
21 to 35	29.5	40.7	40.8	41.5	35.0	2.3	39.8	6.8	43.2	7.4
36 to 65	25.2	37	37.5	40.4	37.0	1.6	36.4	1.5	39.5	1.6
Over 65	10.2	15.3	19.2	23.5	19.3	1.2	27.2	2.9	29.5	2.9

Note:

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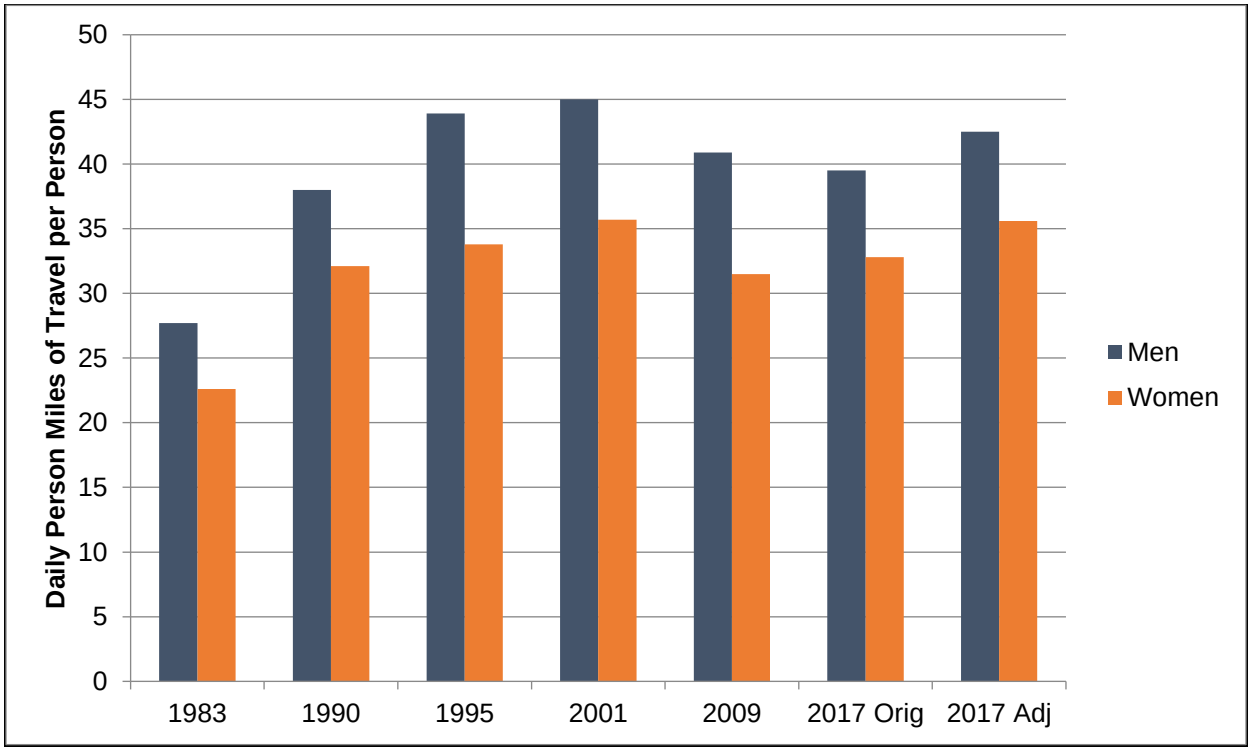
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- The 2017 estimates of vehicle trip length have an adjusted value to account for different methods in trip length reporting, see Appendix A.

Overall, the unadjusted estimate of person miles per day in 2017 was 36.1 miles on average, nominally the same as the 2009 estimate. These miles are reported for all means of transportation and for all purposes and include people who traveled and those who did not.

In 2017 (Figure 5), the unadjusted estimate for average daily miles for men was 39.5 miles per day, for women the estimate was 32.8 miles per day. These were statistically the same as the estimates in 2009 (within the margin of error).

The adjusted estimates are higher for both men and women than the 2009 estimates. The adjusted estimates were 42.5 miles per day for men and 35.6 miles for women. See Appendix A for more details.

Figure 5. Average Daily Person Miles of Travel by Gender, 1983, 1990, 1995 NPTS and 2001, 2009, and 2017 NHTS



Note:

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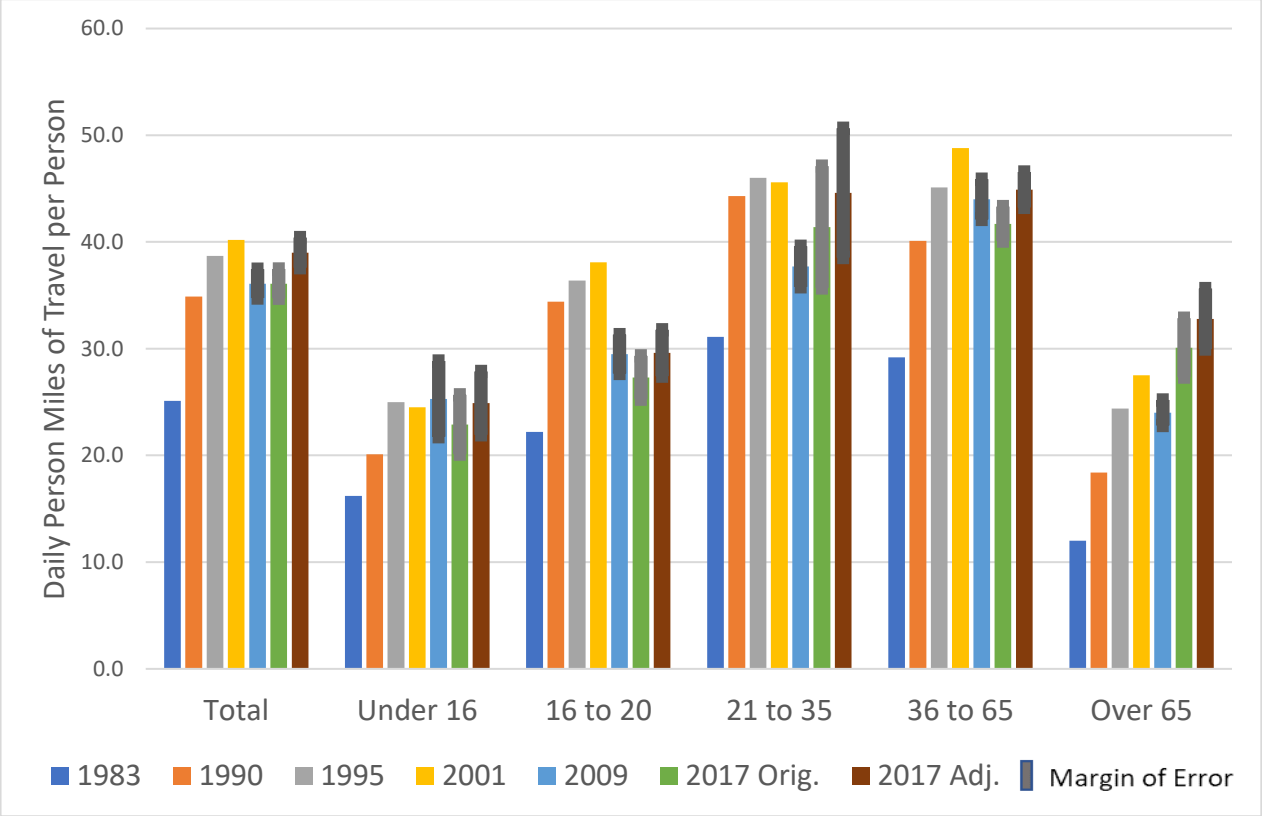
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- The 2017 estimates of vehicle trip length have an adjusted value to account for different methods in trip length reporting, see Appendix A.

The overall trends in person miles of travel (Figure 6) are not as significant as the changes in trip-making. The original estimate of person miles was exactly the same as the estimate in 2009 (36.1 miles per day), while the adjusted estimate is exactly the same as the 1995 estimate (38.7 miles per day).

A notable trend is the increase in travel by people aged 65 and older. The 2017 estimates of daily miles of travel are higher than all previous surveys. For every other age group shown, the 2017 original estimate of person miles per person is within the margin of error of estimates from the earlier surveys.

Figure 6. Average Daily Person Miles of Travel by Age Group 1995 NPTS and 2001, 2009, and 2017 NHTS



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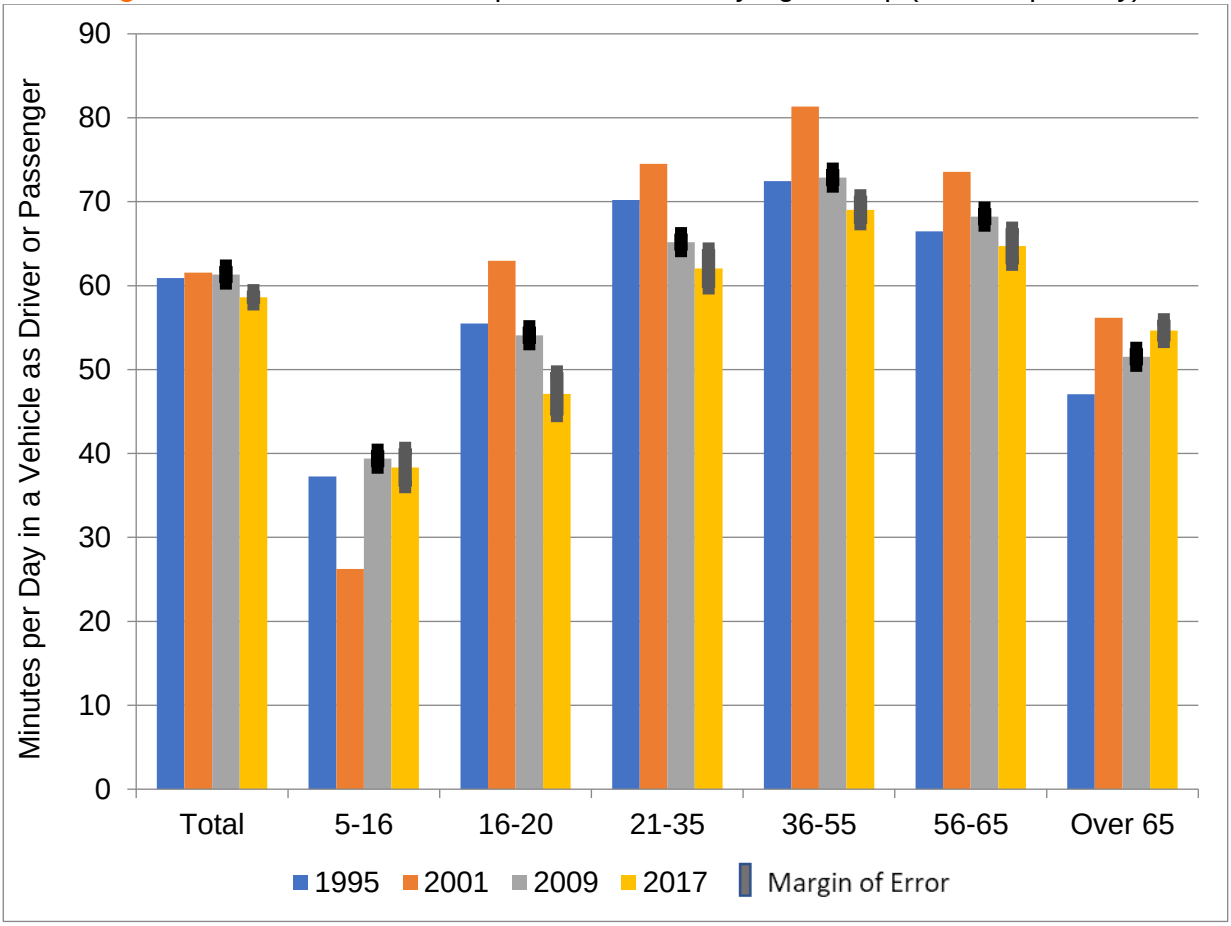
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- The 2017 estimates of vehicle trip length have an adjusted value to account for different methods in trip length reporting, see Appendix A.

Including people who drive and those who are passengers in vehicles, the average American in 2017 spends just under 1 hour a day in a vehicle—58.6 minutes per capita—as a driver or passenger (Figure 7). This estimate is 4 percent lower (2.7 minutes) compared to the 2009 estimate, and the difference is statistically significant.

People in their prime working and commuting years, ages 36-55, spend the most amount of time in a vehicle while children under the age of 16 spend the least amount of time in a vehicle.

In the 2017 NHTS, only people aged 16-20 have a significant decrease in time spent in a vehicle as a passenger or driver. All other age groups have estimates that fall within the margin of error.

Figure 7. Trends in the Time Spent in a Vehicle by Age Group (Minutes per Day)



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- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- The 2017 estimates of vehicle trip length have an adjusted value to account for different methods in trip length reporting, see Appendix A.

5.0 PRIVATE VEHICLE TRAVEL

In Table 15, researchers calculated the average amount of time spent driving using two different methods: (1) by including all drivers, even those who did not drive a private vehicle on the designated travel day, and (2) by excluding any drivers who did not drive on the designated travel day.

In 2017, while the nominal estimates were slightly lower than 2009, they were significantly lower than the 2001 estimates. That is, the estimate of the time spent driving for all drivers (including those who drove and those who did not) did not change between 2009 and 2017 (were within the margin of error); the 2017 estimate was significantly lower than the 2001 estimate.

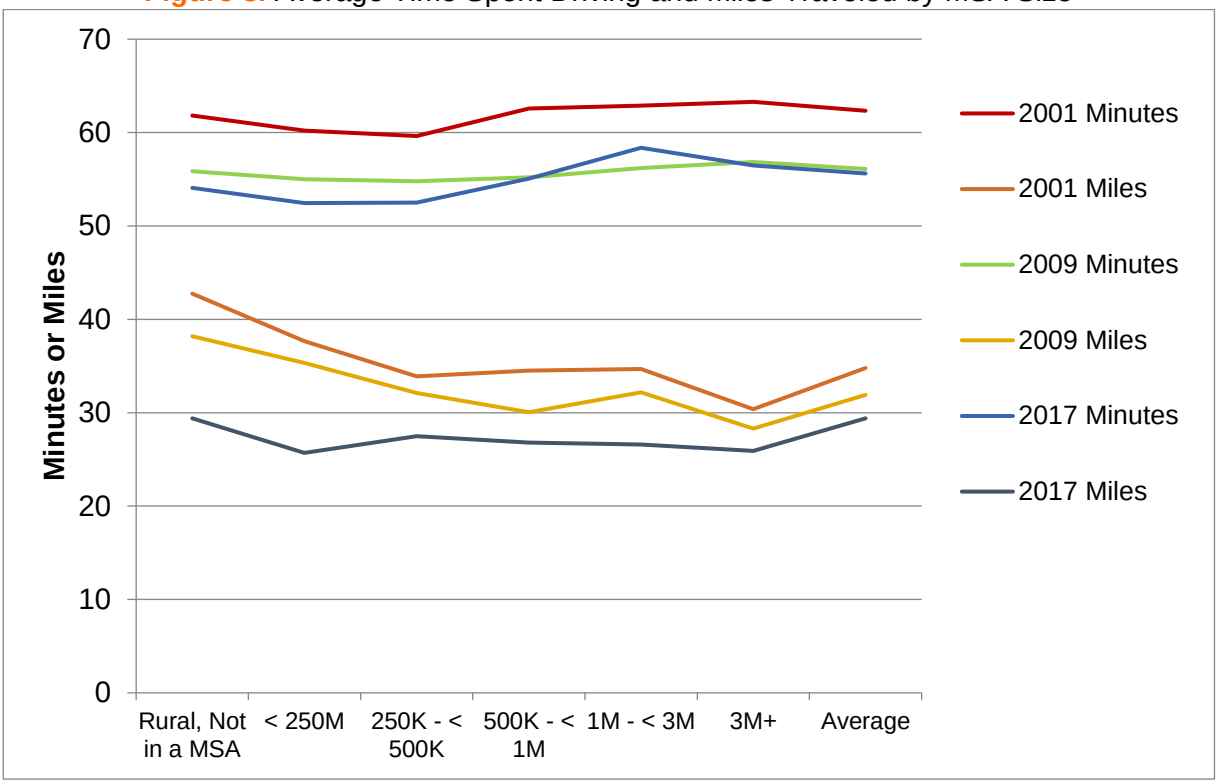
However, looking at people who reported driving on the travel day, the estimate of time spent driving was significantly higher in 2017 compared to 2009. The increase in reported time driving on travel day was notably higher for drivers in metro areas of 1-3 million in population.

Table 15. Trends in the Average Time Spent Driving a Private Vehicle in a Typical Day by MSA Size (minutes)

MSA Size	All Drivers						
	1990	1995	2001	2009	2009 MOE	2017	2017 MOE
ALL	49.35	56.28	62.32	56.09	0.71	55.62	0.80
Rural, Not in MSA	48.85	56.47	61.83	55.87	1.80	54.08	1.15
< 250,000	48.36	53.98	60.22	55.01	4.02	52.45	1.36
250,000 to 499,999	47.82	55.96	59.63	54.79	2.68	52.49	3.11
500,000 to 999,999	50.20	56.91	62.59	55.21	2.36	55.07	1.42
1 million to 2.9 million	50.61	56.48	62.89	56.20	1.76	58.37	1.73
3 million+	49.38	56.49	63.29	56.85	1.15	56.49	1.01
MSA Size	Only Persons Who Drove						
	1990	1995	2001	2009	2009 MOE	2017	2017 MOE
ALL	71.88	73.24	81.35	76.37	0.87	78.91	0.90
Rural, Not in MSA	69.20	72.96	81.74	76.28	2.13	78.45	2.14
< 250,000	67.94	69.35	76.40	73.30	4.75	72.69	1.79
250,000 to 499,999	71.66	71.72	76.50	72.55	3.42	72.94	3.33
500,000 to 999,999	72.42	73.35	79.34	73.57	2.86	76.55	1.62
1 million to 2.9 million	74.38	72.19	79.55	73.64	1.96	79.19	1.67
3 million+	71.08	75.02	85.12	80.48	1.34	83.22	1.49

Figure 8 displays the trends in driving by American households in minutes and miles by MSA size for the 2001, 2009 and 2017 surveys.

Figure 8. Average Time Spent Driving and Miles Traveled by MSA Size



Note:

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- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here excludes them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- "Rural, Not in MSA" includes only full counties designated as rural. There may also be rural pockets included within MSA boundaries.

Since about 1990, the vehicle occupancy estimates, measured as person miles per vehicle mile, seems to have stayed about the same (Table 16).

While there are small nominal differences between the 2017 and earlier estimates, these differences are all within the margins of error.

Table 16. Average Vehicle Occupancy for Selected Trip Purposes
(Person Mile per Vehicle Mile)

Survey Year	Trip Purpose				
	To / From Work	Shopping	Other Family / Personal Errands	Social / Recreation	All Purposes
1977	1.30	2.10	2.00	2.40	1.90
1983	1.29	1.79	1.81	2.12	1.75
1990	1.14	1.71	1.84	2.08	1.64
1995	1.14	1.74	1.78	2.04	1.59
2001	1.14	1.79	1.83	2.03	1.63
2009	1.13	1.78	1.84	2.20	1.67
2009 MOE	0.01	0.05	0.04	0.06	0.03
2017	1.18	1.82	1.82	2.10	1.67
2017 MOE	0.01	0.05	0.13	0.04	0.04

Note

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- “Other Family/Personal Errands” includes trips such as to the post office, dry cleaners, or library
- All Purposes includes other trip purposes not shown, such as trips to school, church, doctor, dentist, and work-related business trips.

6.0 VEHICLE USE AND AVAILABILITY

As displayed in Table 17, two thirds of the households in the United States have one or two vehicles available, according to the 2017 NHTS.

Statistically, the number of households with zero vehicles or two vehicles remained about the same. On the other hand, the number of households with one vehicle and three or more vehicles were significantly higher in 2017 compared to the 2009 estimates.

The estimate of the number of households with three or more vehicles rose significantly between 2009 and 2017, from 25.7 million households to 28.9 million households in 2017.

Table 17. Trends in the Number and Percent of Households by Availability of Household Vehicles (Thousands)

Survey Year	No Vehicle	One Vehicle	Two Vehicles	Three or More Vehicles	ALL	Vehicles Per Household
1969	12,876	30,252	16,501	2,875	62,504	1.16
1977	11,538	26,092	25,942	11,840	75,412	1.59
1983	11,548	28,780	28,632	16,411	85,371	1.68
1990	8,573	30,654	35,872	18,248	93,347	1.77
1995	7,989	32,064	40,024	18,914	98,990	1.78
2001	8,716	33,757	39,938	24,955	107,365	1.89
2009	9,828	36,509	41,077	25,688	113,101	1.86
2009 MOE	49	302	274	270	0	0.01
2017	10,567	39,648	39,125	28,869	118,208	1.88
2017 MOE	0	0	272	272	0	0.01

Table 17. Trends in the Number and Percent of Households by Availability of Household Vehicles (Thousands) (continued)

Percent	No Vehicle	One Vehicle	Two Vehicles	Three or More Vehicles	ALL
1969	20.6%	48.4%	26.4%	4.6%	100%
1977	15.3%	34.6%	34.4%	15.7%	100%
1983	13.5%	33.7%	33.5%	19.2%	100%
1990	9.2%	32.8%	38.4%	19.6%	100%
1995	8.1%	32.4%	40.4%	19.1%	100%
2001	8.1%	31.4%	37.2%	23.2%	100%
2009	8.7%	32.3%	36.3%	22.7%	100%
2017	8.9%	33.5%	33.1%	24.4%	100%

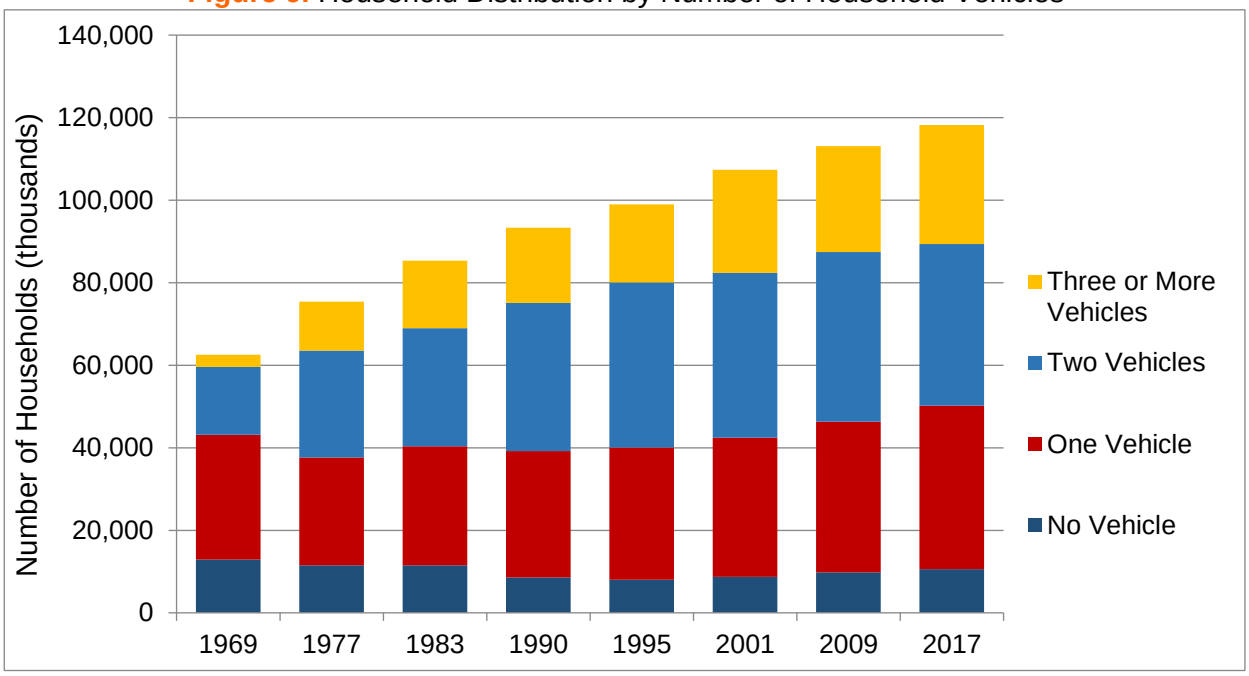
Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- In 1969, household vehicles did not include pickups or other light trucks.
- SUVs were added as a vehicle class in the NHTS survey in 1995.
- In 2009 the survey included Light Electric Vehicles (LEV) as a separate classification.
- Motorcycle, moped, LEVs and “other” POV are excluded from the calculation of vehicle age.
- Standard error of the estimate is too small to show.
- No Vehicle and One Vehicle categories were used as controls in calibrating the weights according to the weighting plan and should have nearly no variance in the replicate weights, resulting in standard errors close to 0.

Out of the 120 million households in the United States, about 10.5 million are without a vehicle, according to the 2017 NHTS (Figure 9). The number of households with zero vehicles available remained statistically the same in 2017 (within the margin of error of the 2009 estimate).

On the other hand, since 1969 the number of households that owned three or more vehicles has grown by tenfold—from 2.9 million to nearly 29 million. The percentage of households with three or more vehicles has gone from 5 percent to nearly a quarter of all U.S. households.

Figure 9. Household Distribution by Number of Household Vehicles



Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more and CPO urban households. This and other methods changes in the data series are outlined in Appendix B.
- In 1969, household vehicles did not include pickups or other light trucks
- SUVs were added as a vehicle class in the NHTS survey in 1995.
- In 2009 the survey included Light Electric Vehicles (LEV) as a separate classification.
- Motorcycle, moped, LEVs and “other” POV are excluded from the calculation of vehicle age.

Table 18 shows the traditional correlation between high population density and the percentage of households with fewer or no vehicles in the NHTS data series.

Over a quarter (26.8%) of the households in areas with a population density greater than 10,000 per square mile did not own a vehicle in 2017 and 30.7 percent owned two or more vehicles.

On the other hand, only 4.3 percent of the households in the least densely populated areas did not own a vehicle in 2017 and almost 70 percent (68.3%) owned two or more vehicles.

Table 18. Trends in the Distribution of Households by Household Vehicle Availability and Population Density

Population Density	Survey Year	Household Vehicle Availability			
		ALL	No Vehicle	One Vehicle	Two or more Vehicles
Less than 2,000 People per Square Mile	1990	100.0%	6.1%	30.4%	63.5%
	1995	100.0%	3.6%	26.6%	69.8%
	2001	100.0%	3.8%	25.8%	70.5%
	2009	100.0%	4.4%	26.8%	68.8%
	2009 MOE	-	0.41	0.76	0.89
	2017	100.0%	4.3%	27.4%	68.3%
	2017 MOE	-	0.31	0.42	0.56
2,000 to 4,000 People per Square Mile	1990	100.0%	7.6%	33.4%	59.0%
	1995	100.0%	5.8%	33.3%	60.8%
	2001	100.0%	5.8%	32.8%	61.4%
	2009	100.0%	6.4%	34.1%	59.5%
	2009 MOE	-	0.84	1.47	1.66
	2017	100.0%	6.7%	35.6%	57.7%
	2017 MOE	-	0.61	0.86	0.89

Table 18. Trends in the Distribution of Households by Household Vehicle Availability and Population Density (continued)

Population Density	Survey Year	Household Vehicle Availability			
		ALL	No Vehicle	One Vehicle	Two or more Vehicles
4,000 to 10,000 People per Square Mile	1990	100.0%	10.9%	38.2%	50.9%
	1995	100.0%	7.7%	37.2%	55.1%
	2001	100.0%	8.1%	36.3%	55.6%
	2009	100.0%	8.4%	37.5%	54.1%
	2009 MOE	-	0.73	1.36	1.34
	2017	100.0%	9.3%	38.1%	52.7%
	2017 MOE	-	0.79	1.23	1.39
10,000 or more People per Square Mile	1990	100.0%	35.1%	40.0%	24.9%
	1995	100.0%	27.4%	41.8%	30.8%
	2001	100.0%	26.3%	40.3%	33.4%
	2009	100.0%	28.4%	39.9%	31.7%
	2009 MOE	-	1.40	1.68	1.55
	2017	100.0%	26.8%	42.5%	30.7%
	2017 MOE	-	1.13	1.32	1.20

Note:

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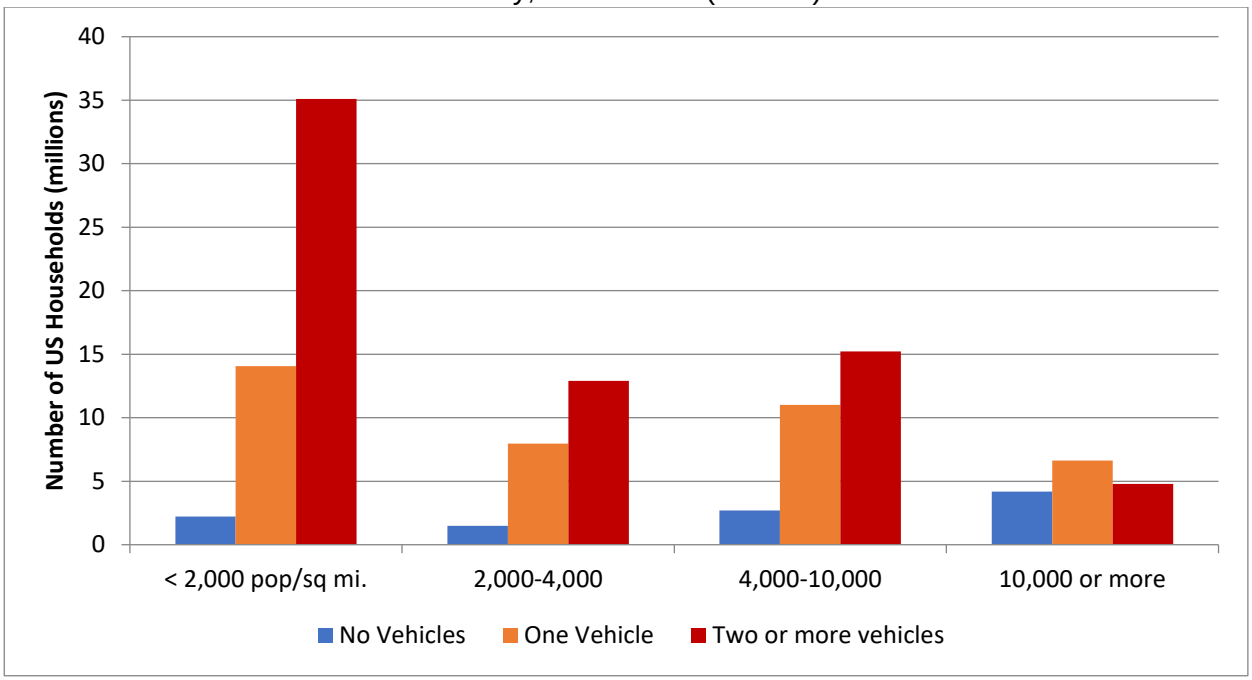
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- In 1969, household vehicles did not include pickups or other light trucks.
- SUVs were added as a vehicle class in the NHTS survey in 1995.
- In 2009 the survey included Light Electric Vehicles (LEV) as a separate classification.
- Motorcycle, moped, LEVs and “other” POV are excluded from the calculation of vehicle age.

Overall, most households in the United States—over 51 million or 43.4 percent of all—are in low-density areas with less than 2,000 people per square mile (Figure 10).

An equal amount, another 51 million and 43.4 percent of all, are in areas with between 2,000 and 10,000 people per square mile.

Only 13.2 percent of households are in very high-density areas of more than 10,000 people per square mile. In these denser urban areas, households are less likely to have two or more vehicles, and more likely to have fewer vehicles.

Figure 10. Distribution of the Number of U.S. Households by Vehicle Ownership and Population Density, 2017 NHTS (Millions)



Note:

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- 2009 NHTS sample did not include households without landlines telephones (CPO households).
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- In 1969, household vehicles did not include pickups or other light trucks.
- SUVs were added as a vehicle class in the NHTS survey in 1995.
- In 2009 the survey included Light Electric Vehicles (LEV) as a separate classification.
- Motorcycle, moped, LEVs and “other” POV are excluded from the calculation of vehicle age.

Table 19 shows that larger metro areas have higher proportions of households with no vehicles than smaller towns and rural areas.

Overall, the proportion of households without a vehicle declined significantly from 1977 to 1995, and then—in some areas—experienced a small shift upward.

The proportion of households without a vehicle available overall was 15.3 percent in 1977, and fell to 8.1 percent in 1995 and 2001, rising to 8.7 percent in 2009 and 8.9 percent in 2017.

Table 19. Trends in the Percent of Households Without a Vehicle Within MSA Size Group

Survey Year	Metro Area Size						
	Rural, Not in MSA	Less than 250,000	250,000 to 499,999	500,000 to 999,999	1 to 2.9 million	3+ million	ALL
1977	12.2%	13.7%	12.2%	14.0%	14.2%	26.1%	15.3%
1983	10.5%	10.1%	8.1%	14.3%	12.1%	25.4%	13.5%
1990	7.7%	8.6%	5.7%	8.4%	8.2%	12.4%	9.2%
1995	5.3%	4.8%	7.3%	6.3%	6.9%	11.2%	8.1%
2001	5.8%	5.8%	5.2%	7.0%	6.4%	11.9%	8.1%
2009	5.6%	6.3%	5.6%	8.3%	7.2%	12.6%	8.7%
2009 MOE	0.14	0.12	0.09	0.12	0.15	0.14	0.04
2017	6.8%	7.0%	5.8%	7.4%	7.4%	12.8%	8.9%
2017 MOE	0.07	0.05	0.05	0.04	0.11	0.12	0.00

Note:

- Totals in all tables can include cases that were not included in any table subcategory..
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- In 1969, household vehicles did not include pickups or other light trucks.
- SUVs were added as a vehicle class in the NHTS survey in 1995.
- In 2009 the survey included Light Electric Vehicles (LEV) as a separate classification.
- Motorcycle, moped, LEVs and “other” POV are excluded from the calculation of vehicle age.
- "Rural, Not in MSA" includes only full counties designated as rural. There may also be rural pockets included within MSA boundaries.
- The population size groups for 1977 - 1983 NPTS are MSA Size Groups. 1990 - 2001 are MSA Size Groups. 2009 - 2017 are CMSA size groups.

Table 20 shows vehicle in the household-based fleet by vehicle type and age. It shows how much the average vehicle has aged over the last decades. Figure 11 shows these trends in a pictorial format.

The share of vans in the household vehicle fleet declined again in 2017—the percentage of vehicles classified as vans in 2017 (6.1%) was lower than the 2009 estimate (7.8%). On the other hand, the percentage of vehicles classified as SUVs continued to increase—as they have since the survey included a category for them in 1995. From just under 7 percent of all vehicles in 1995, SUVs grew to almost a quarter (23.7%) of all household vehicles in 2017.

Continuing a long-standing trend, the household vehicle fleet continues to age. The most recent data shows the average vehicle owned by U.S. households is 10.3 years old, about 1 year older than the estimate in 2009.

Auto, Van, SUV, and Pickups were significantly older in 2017 compared to the age estimate in 2009, and each of these vehicle types were significantly older in 2009 compared to 2001. Over the last 4 decades the U.S. fleet has aged almost 4 years—the average vehicle in the household fleet was 6.6 years old in 1977, compared to 10.27 years old in 2017.

Table 20. Household-Based Vehicle Distribution and Average Vehicle Age by Vehicle Type

Distribution of Vehicles by Vehicle Type									
Category	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2009 MOE**	**2017**	**2017 MOE**
TOTAL	100%	100%	100%	100%	100%	100%	0.00	100%	0.00
Auto	79.6%	75.9%	74.7%	64.3%	56.8%	49.9%	0.45	49.5%	0.44
Van	2.8%	3.6%	5.5%	7.8%	9.0%	8.2%	0.28	6.1%	0.28
Sport Utility	NA	NA	NA	6.9%	12.1%	19.4%	0.35	23.7%	0.46
Pickup	12.8%	15.2%	17.2%	17.7%	18.4%	17.8%	0.29	15.9%	0.21
Other Truck	1.3%	1.5%	0.6%	0.4%	0.5%	0.4%	0.08	0.5%	0.10
RV/Motor Home	0.4%	0.5%	0.5%	0.5%	0.7%	0.5%	0.06	0.6%	0.07
Motorcycle/Moped	2.9%	3.1%	1.4%	0.9%	2.1%	3.3%	0.24	3.3%	0.14
Other	0.2%	0.2%	0.1%	0.1%	0.5%	0.3%	0.05	0.4%	0.04

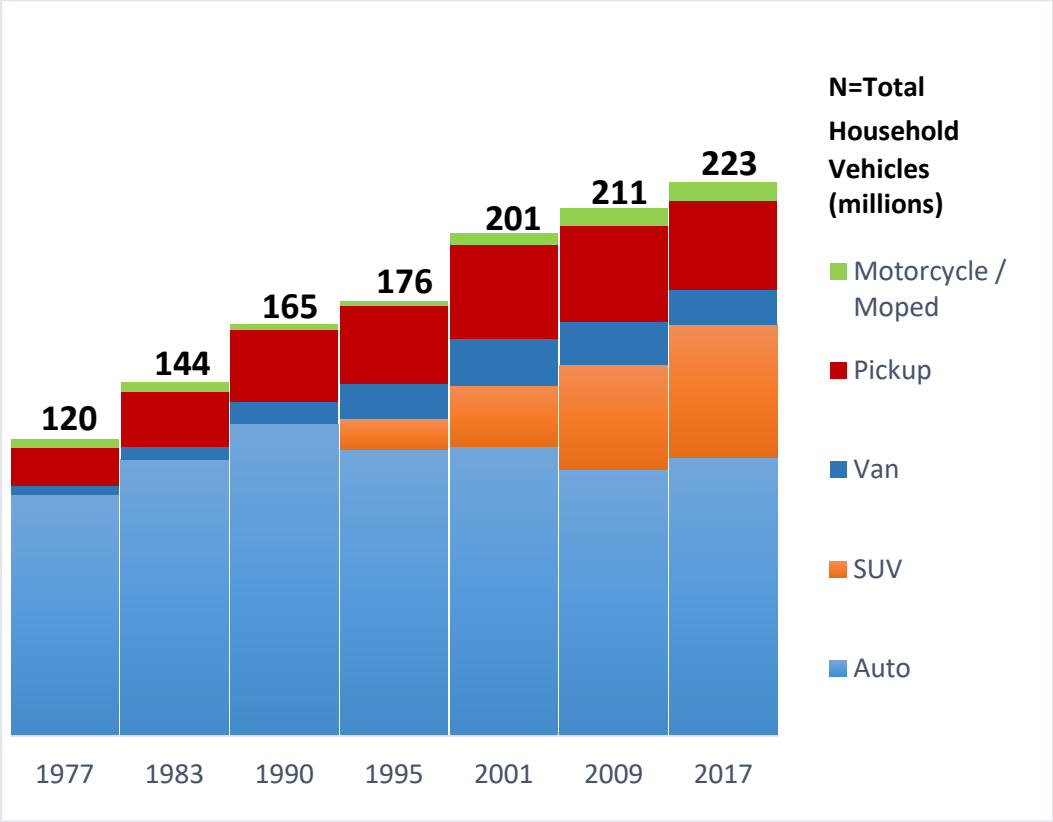
Table 20. Household-Based Vehicle Distribution and Average Vehicle Age by Vehicle Type (continued)

Average Vehicle Age									
Category	1977	1983	1990	1995	2001	2009	2009 MOE	2017	2017 MOE
All	6.60	7.60	7.71	8.33	8.87	9.38	0.10	10.27	0.12
Auto	6.40	7.20	7.61	8.24	8.98	9.57	0.11	10.10	0.18
Van	5.50	8.45	5.88	6.68	7.56	8.68	0.18	10.65	0.27
Sport Utility	NA	NA	NA	6.56	6.44	7.09	0.15	8.34	0.13
Pickup	7.30	8.54	8.43	9.65	10.05	11.10	0.21	13.12	0.17
Other Truck	11.60	12.39	14.48	14.93	17.72	17.76	1.74	17.29	1.04
RV/Motor Home	4.50	10.69	10.44	13.21	13.49	15.46	1.47	15.77	1.29

Note:

- Totals in all tables can include cases that were not included in any table subcategory.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- In 1969, household vehicles did not include pickups or other light trucks.
- SUVs were added as a vehicle class in the NHTS survey in 1995.
- In 2009 the survey included Light Electric Vehicles (LEV) as a separate classification.
- Motorcycle, moped, LEVs and “other” POV are excluded from the calculation of vehicle age.
- Totals do not include any unreported vehicle ages, but do include vehicle types such as motorcycle, RV, etc. that are not shown.

Figure 11. Trends in the Number of Household-Based Vehicles by Type (Millions)



Note:

- Totals in all tables can include cases that were not included in any table subcategory.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- In 1969, household vehicles did not include pickups or other light trucks.
- SUVs were added as a vehicle class in the NHTS survey in 1995.
- In 2009 the survey included Light Electric Vehicles (LEV) as a separate classification.
- Motorcycle, moped, LEVs and “other” POV are excluded from the calculation of vehicle age.

Over the last 4 decades, a striking feature of the household vehicle fleet is the increase in the number of years an average vehicle is operated (Table 21).

In 1977, automobiles averaged 6.4 years of age while automobiles in 2017 averaged 10.1 years of age—an increase of 3.7 years on average. In 1995 (the first year SUVs were separately catalogued in the NHTS), Vans/SUV/Pickup Trucks were 8.3 years old on average. By 2017, they averaged 10.4 years—more than 2 years older.

As a result, of the aging fleet, many older cars are in daily use. In 1977, about one out of six vehicles was 10 years old or older; by 2017, nearly half (48.5%) of the household-based fleet was 10 years old or more.

Table 21. Trends in the Distribution of Household-Based Vehicles by Vehicle Age and Vehicle Type (Percent)

Survey Year	Vehicle Type	Vehicle Age:					
		0 to 2 years	3 to 5 years	6 to 9 years	10 or more	Total	Average Age
1977	Auto	27.3%	30.4%	26.7%	15.6%	100.0%	6.4
	Van/Pickup	29.9%	25.6%	21.1%	23.4%	100.0%	5.6
	ALL	27.8%	29.6%	25.7%	16.9%	100.0%	6.6
1983	Auto	20.0%	28.0%	27.4%	24.6%	100.0%	7.2
	Van/Pickup	16.6%	26.6%	25.0%	31.8%	100.0%	7.8
	ALL	19.2%	27.6%	26.9%	26.3%	100.0%	7.6
1990	Auto	15.6%	27.7%	26.8%	29.9%	100.0%	7.6
	Van/Pickup	19.7%	27.2%	20.9%	32.2%	100.0%	8.0
	ALL	16.6%	27.5%	25.3%	30.6%	100.0%	7.7
1995	Auto	14.9%	21.7%	30.3%	33.1%	100.0%	8.2
	Van/SUV/Pickup	19.2%	21.6%	25.5%	33.7%	100.0%	8.3
	ALL	16.2%	21.5%	28.5%	33.8%	100.0%	8.3

Table 21. Trends in the Distribution of Household-Based Vehicles by Vehicle Age and Vehicle Type (Percent) (continued)

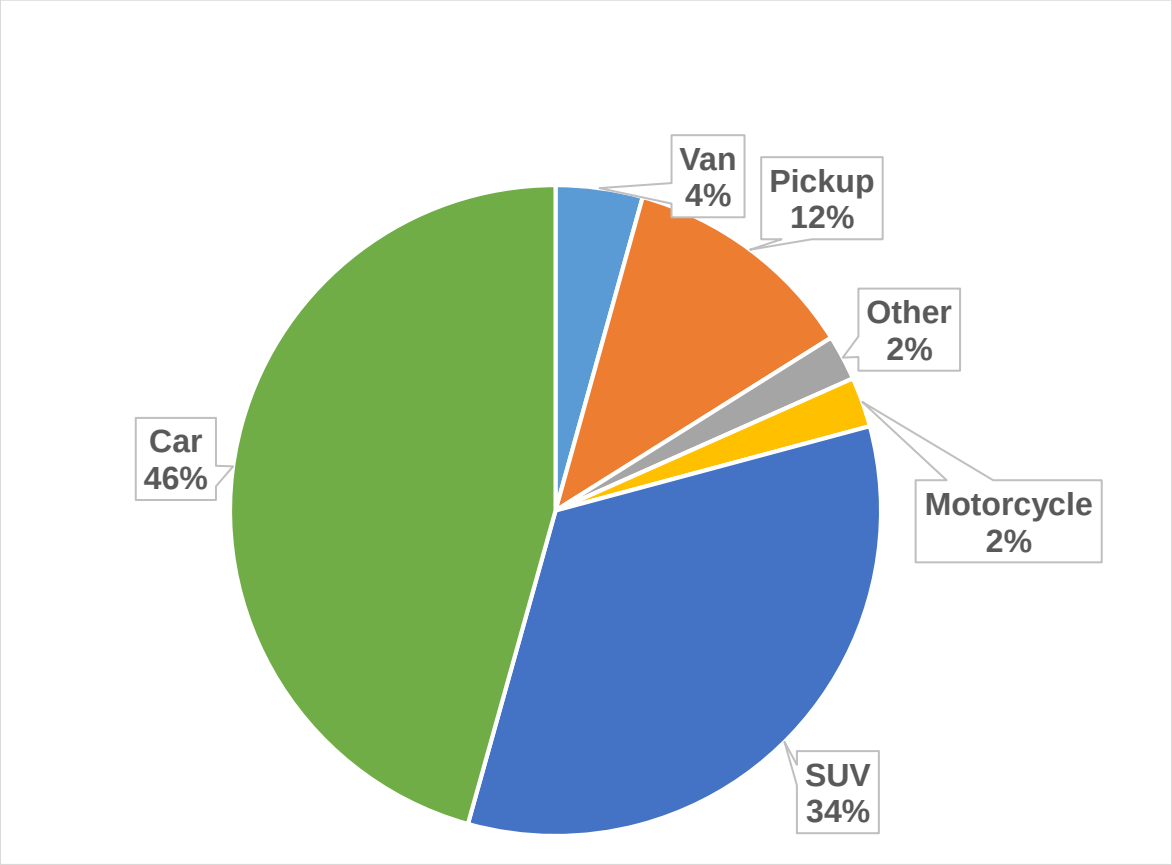
Survey Year	Vehicle Type	Vehicle Age:					
		0 to 2 years	3 to 5 years	6 to 9 years	10 or more	Total	Average Age
2001	Auto	13.3%	20.4%	25.5%	40.9%	100.0%	9.0
	Van/SUV/Pickup	18.6%	23.5%	22.6%	35.4%	100.0%	8.5
	ALL	15.4%	21.5%	24.1%	39.0%	100.0%	8.9
2009	Auto	12.4%	19.7%	27.0%	40.9%	100.0%	9.6
	Van/SUV/Pickup	12.8%	23.6%	27.1%	36.6%	100.0%	9.0
	ALL	12.7%	21.6%	26.8%	38.9%	100.0%	9.4
2009 MOE	Auto	0.49%	0.58%	0.70%	0.74%	0.00%	0.11
	Van/SUV/Pickup	0.49%	0.60%	0.69%	0.66%	0.00%	0.11
	ALL	0.36%	0.42%	0.49%	0.54%	0.00%	0.10
2017	Auto	12.2%	20.5%	20.8%	46.6%	100.0%	10.1
	Van/SUV/Pickup	14.5%	17.5%	18.0%	50.0%	100.0%	10.4
	ALL	13.2%	18.9%	19.4%	48.5%	100.0%	10.3
2017 MOE	Auto	0.39%	0.60%	0.57%	0.91%	0.00%	0.18
	Van/SUV/Pickup	0.50%	0.41%	0.74%	0.55%	0.00%	0.09
	ALL	0.32%	0.45%	0.49%	0.62%	0.00%	0.12

Note:

- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- Motorcycle, moped, LEVs and “other” POV are excluded from the calculation of vehicle age.

Figure 12 shows that after cars, SUVs appear to be the most popular vehicle type among newer vehicles, according to the 2017 NHTS.

Figure 12. Distribution of Household-Based Vehicles Two Years old or Newer by Vehicle Type (Percent)



Note:

- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- Motorcycle, moped, LEVs and "other" POV are excluded from the calculation of vehicle age.

Based on vehicle owners' estimates, an average U.S. vehicle was driven slightly more than 10,000 miles a year in 2017, statistically the same as in 2009 (Table 22).

Overall, average miles per vehicle (from the owner's estimate) seems to have peaked in the 1990s. In the 2017 survey, it is lower than the estimates in 2001 for all vehicles in all age categories.

Table 22. Trends in the Average Annual Miles per Vehicle by Vehicle Age (Vehicle Owner's Estimate)

Survey Year	Vehicle Age				
	0 to 2 years	3 to 5 years	6 to 9 years	10 or more years	ALL
1969	15,700	11,200	9,700	6,500	11,600
1977	14,460	11,074	9,199	6,755	10,679
1983	15,292	11,902	9,253	7,023	10,315
1990	16,811	13,706	12,554	9,176	12,458
1995	16,092	14,004	12,608	8,758	12,226
2001	14,892	13,230	11,603	7,863	11,078
2009	13,851	12,042	10,741	7,401	10,088
2009 MOE	533	198	280	160	133
2017	13,065	12,582	11,432	7,812	10,164
2017 MOE	372	621	349	214	131

Note:

- Totals in all tables can include cases that were not included in any table subcategory.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- In 1969, household vehicles did not include pickups or other light trucks.
- SUVs were added as a vehicle class in the NHTS survey in 1995.
- In 2009 the survey included Light Electric Vehicles (LEV) as a separate classification.
- Motorcycle, moped, LEVs and "other" POV are excluded from the calculation of vehicle age.

The annual miles shown in Table 23a and 23b are based on the driver's estimate of how many miles he or she drives (in all vehicles) in a year.

Like other measures of vehicle travel, these estimates have also decreased significantly between 2009 and 2017. Drivers aged 20 to 54 estimated that in a year they drove significantly fewer miles than comparable age groups in 2009.

The decrease in annual miles estimated by men drivers was significant for 20 to 54-year-olds, but not drivers 16-19 or those over 55. Women driver's estimates were statistically the same as in 2009 in all age groups (although the nominal estimate was lower in every age group).

Table 23a. Trends in the Average Annual Miles per Licensed Driver-by-Driver Age (Self-Estimate)

Survey Year	Drivers					
	16 to 19	20 to 34	35 to 54	55 to 64	65+	ALL
1969	4,633	9,348	9,771	8,611	5,171	8,685
1977	5,662	11,063	11,539	9,196	5,475	10,006
1983	4,986	11,531	12,627	9,611	5,386	10,536
1990	8,485	14,776	14,836	11,436	7,084	13,125
1995	7,624	15,098	15,291	11,972	7,646	13,476
2001	7,331	15,650	15,627	13,177	7,684	13,827
2009	6,244	13,709	15,117	12,528	8,250	12,888
2009 MOE	540	615	321	387	346	204
2017	5,561	12,187	13,806	12,095	8,218	11,621
2017 MOE	383	466	294	267	223	169

Table 23b. Trends in the Average Annual Miles per Licensed Driver-by-Driver Age and Gender (Self-Estimate)

Survey Year	Male Drivers					
	16 to 19	20 to 34	35 to 54	55 to 64	65+	ALL
1969	5,461	13,133	12,841	10,696	5,919	11,352
1977	7,045	15,222	16,097	12,455	6,795	13,397
1983	5,908	15,844	17,808	13,431	7,198	13,962
1990	9,543	18,310	18,871	15,224	9,162	16,536
1995	8,206	17,976	18,858	15,859	10,304	16,550
2001	8,228	18,634	19,287	16,883	10,163	16,946
2009	6,652	15,716	17,654	15,117	10,322	15,139
2009 MOE	633	1041	450	555	324	328
2017	5,893	13,291	15,705	14,717	9,974	13,393
2017 MOE	796	583	437	525	253	228

Survey Year	Female Drivers					
	16 to 19	20 to 34	35 to 54	55 to 64	65+	ALL
1969	3,586	5,512	6,003	5,375	3,664	5,411
1977	4,036	6,571	6,534	5,097	3,572	5,940
1983	3,874	7,121	7,347	5,432	3,308	6,382
1990	7,387	11,174	10,539	7,211	4,750	9,528
1995	6,873	12,004	11,464	7,780	4,785	10,142
2001	6,106	12,266	11,590	8,795	4,803	10,267
2009	5,753	11,484	12,035	9,544	5,824	10,244
2009 MOE	881	472	381	407	646	213
2017	5,104	11,026	11,895	9,434	6,373	9,854
2017 MOE	610	562	389	200	237	241

Note:

- Totals in all tables can include cases that were not included in any table subcategory.
- In 1995, some drivers reported zero annual miles. These were changed to miles not reported.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- In 1969, household vehicles did not include pickups or other light trucks.
- SUVs were added as a vehicle class in the NHTS survey in 1995.
- In 2009 the survey included Light Electric Vehicles (LEV) as a separate classification.
- Motorcycle, moped, LEVs and “other” POV are excluded from the calculation of vehicle age.

7.0 COMMUTE TRAVEL PATTERNS

Table 24 shows that the estimate of the number of vehicle trips to and from work is about the same in 2017 compared to that of 2009 (within the margin of error). Although the estimate of total vehicle miles for commuting is nominally higher in 2017 compared to 2009, the differences are not significant.

The total number of estimated workers has increased, while the annual commute vehicle trips per worker has remained virtually the same over many survey iterations, excepting the 1995 NPTS.

Table 24. Trends in Commute Trips and Vehicle Miles in Commute

Survey Year	Commute Vehicle Trips (millions)	Commute VMT (millions)	Total VMT (millions)	% Commute VMT of Total VMT	Workers (thousands)	Annual Commute Vehicle Trips per Worker
1969	27,844	260,716	775,940	33.60%	75,758	368
1977	31,886	287,710	907,603	31.70%	93,019	343
1983	35,271	301,644	1,002,139	30.10%	103,244	342
1990	41,792	453,042	1,695,290	26.72%	118,343	353
1995	54,782	642,610	2,068,368	31.07%	131,697	416
2001	51,395	614,548	2,274,797	27.02%	145,272	354
2009	51,699	623,479	2,245,112	27.77%	151,373	342
2009 MOE	897	16,794	56,158	-	893	-
2017 Orig.	53,154	635,792	2,105,882	30.19%	156,988	339
2017 Orig. MOE	1,131	22,741	88,132	-	1,012	-
2017 Adj.	-	682,548	2,321,820	28.07%	-	-
2017 Adj. MOE	-	24,399	98,080	-	-	-

Note:

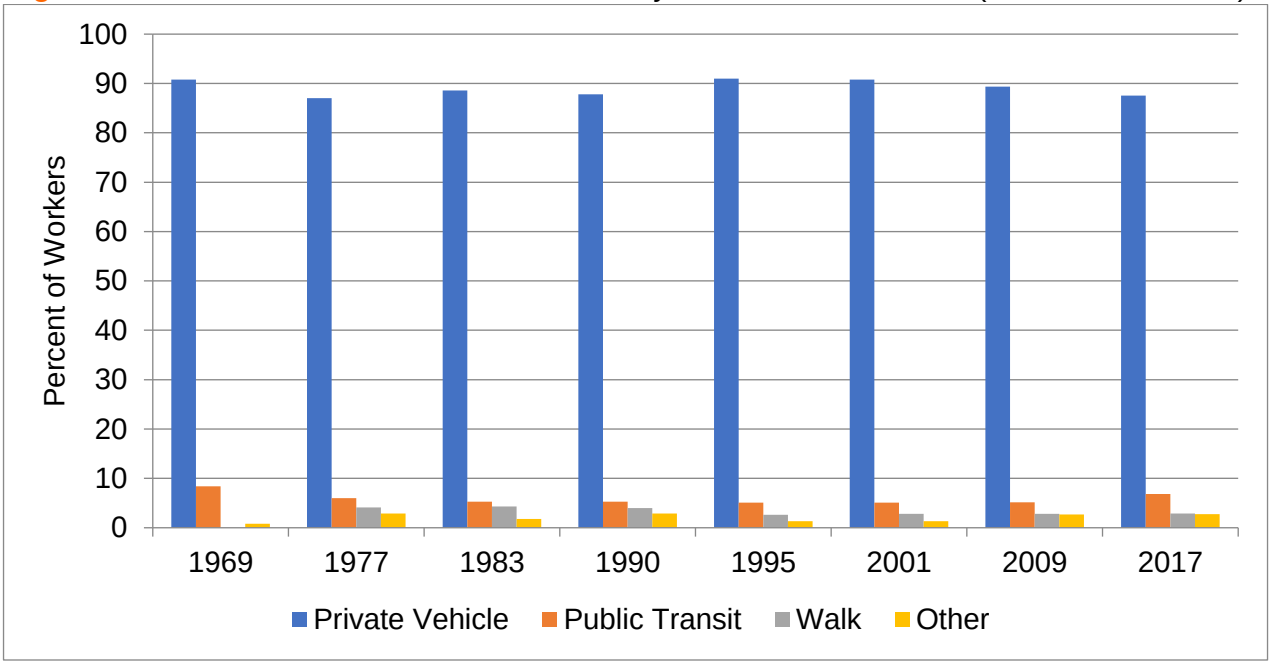
- Totals in all tables can include cases that were not included in any table subcategory.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- Trip miles and travel times were calculated using actual trips to and from work as reported in the travel day file.

- The usual mode is defined as the means of transportation usually used to go to work in the week prior to the travel day.
- Unlike the Census Journey-to-Work data, the NHTS does not include "work at home" in usual commute data.
- "Other" includes travel modes not specifically cited, such as motorcycle, taxi, bike, truck, and other.

Across many decades, the vast majority of workers have traveled to work in a privately-owned vehicle. However, in the 2017 NHTS the estimate of workers commuting by private vehicle is significantly lower (87.5% of workers) than the 2009 estimate (89.4% of workers) (Figure 13).

Table 25 shows that the 2017 NHTS estimates 6.9 percent of workers use public transit as their usual means of travel to work, a significant increase from 2009 and previous estimates.

Figure 13. Trends in the Distribution of Workers by Usual Commute Mode (Percent of Workers)



Note:

- Totals in all tables can include cases that were not included in any table subcategory.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- Trip miles and travel times were calculated using actual trips to and from work as reported in the travel day file.
- The usual mode is defined as the means of transportation usually used to go to work in the week prior to the travel day.
- Unlike the Census Journey-to-Work data, the NHTS does not include "work at home" in usual commute data.
- "Other" includes travel modes not specifically cited, such as motorcycle, taxi, bike, truck, and other.
- Public transit includes local bus, commuter bus, commuter train, subway, trolley, and streetcar.

Table 25. Trends in the Distribution of Workers by Usual Commute Mode (Percent of Workers)

Survey Year	All Modes	Private Vehicle	Public Transit	Walk	Other
1969	100%	90.8	8.4	N/A	0.8
1977	100%	87.0	6.0	4.1	2.9
1983	100%	88.6	5.3	4.3	1.8
1990	100%	87.8	5.3	4.0	2.9
1995	100%	91.0	5.1	2.6	1.3
2001	100%	90.8	5.1	2.8	1.3
2009	100%	89.4	5.1	2.8	2.7
2009 MOE		0.52	0.41	0.34	0.25
2017	100%	87.5	6.9	2.9	2.7
2017 MOE		0.53	0.32	0.34	0.29

Note:

- Totals in all tables can include cases that were not included in any table subcategory.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- The usual mode is defined as the means of transportation usually used to go to work in the week prior to the travel day.
- Unlike the Census Journey-to-Work data, the NHTS does not include “work at home” in usual commute data.
- “Other” includes travel modes not specifically cited, such as motorcycle, taxi, bike, truck, and other.
- Public transit includes local bus, commuter bus, commuter train, subway, trolley, and streetcar.

Interestingly, when comparing the report by the same respondents of how they "usually" commute and how they actually travelled to work on the travel day, some important differences emerge. For example, as shown in Table 26, driving alone has the highest mode loyalty—86.2 percent of workers who say they usually drive alone do so on the travel day.

About 70 percent of commuters who usually travel by transit, walk, or bike report doing so on their travel day. When they do not use their usual mode, they are most likely to share a ride in a private auto.

The percentage of workers on their assigned travel day who share a ride to work (including family members riding together) is 18.8 percent compared to the "usual" estimate of 11.0 percent. "Shared ride" does not include ride-hailing (such as Uber/Lyft, which is classified with "taxi" in the 2017 NHTS and would be in "Other"). The table does not show "Other" modes and excludes workers who did not report both a usual and actual mode to work (15% of all).

Table 26. Usual Commute Mode to Work vs Actual Commute Mode on Travel Day

'Usual' Commute Mode	On Travel Day Commuted by:					
	Drove Alone	Shared Ride	Transit	Walk	Bike	Usual Mode Share:
Drove Alone	86.2%	12.8%	0.2%	0.6%	0.1%	76.2%
Shared Ride	37.2%	60.2%	1.0%	1.2%	0.2%	11.0%
Transit	4.8%	14.4%	70.8%	7.0%	0.8%	6.9%
Walk	7.3%	18.2%	2.6%	69.8%	0.9%	2.9%
Bike	8.1%	11.9%	3.4%	4.6%	70.3%	1.1%
Actual Mode Share	71.0%	18.8%	5.2%	3.3%	1.0%	

Note:

- Totals in all tables can include cases that were not included in any table subcategory.
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- The usual mode is defined as the means of transportation usually used to go to work in the week prior to the travel day.
- Table does not show "Other" modes of travel.

Table 27 displays trends in average trip lengths, travel time, and speed for different modes of transportation.

Table 27. Trends in General Commute Patterns by Mode of Transportation

Survey Year	All Modes		
	Average Commute Trip Length (miles)	Average Commute Travel Time (minutes)	Average Commute Speed (miles per hour)
1977	9.06	19.23	34.72
1983	8.54	18.20	26.84
1990	10.65	19.60	33.35
1995	11.63	20.65	34.67
2001	12.11	23.32	32.23
2009	11.79	23.85	27.50
2009 MOE	0.29	0.35	0.33
2017 Orig.	11.46	26.58	23.42
2017 Orig. MOE	0.34	0.56	0.28
2017 Adj.	12.22	26.58	25.06
2017 Adj. MOE	0.36	0.56	0.29

Survey Year	Private Vehicle		
	Average Commute Trip Length (miles)	Average Commute Travel Time (minutes)	Average Commute Speed (miles per hour)
1977	9.61	18.95	37.50
1983	8.86	17.62	27.78
1990	11.02	19.05	31.49
1995	11.84	20.10	35.18
2001	12.10	22.49	32.27
2009	12.09	22.85	28.87
2009 MOE	0.25	0.34	0.31
2017 Orig.	11.84	25.01	25.22
2017 Orig. MOE	0.38	0.56	0.33
2017 Adj.	12.71	25.01	27.08
2017 Adj. MOE	0.41	0.56	0.35

Table 27. Trends in General Commute Patterns by Mode of Transportation (continued)

Survey Year	Public Transit		
	Average Commute Trip Length (miles)	Average Commute Travel Time (minutes)	Average Commute Speed (miles per hour)
1977	7.48	37.59	12.58
1983	9.00	37.79	15.44
1990	12.75	41.10	18.02
1995	12.88	41.95	18.22
2001	11.73	55.50	12.96
2009	10.18	52.98	11.42
2009 MOE	1.54	4.19	0.99
2017 Orig.	12.09	58.11	11.63
2017 Orig. MOE	1.15	2.06	0.73
Survey Year	**Walk**		
	Average Commute Trip Length (miles)	Average Commute Travel Time (minutes)	Average Commute Speed (miles per hour)
1977	-	-	-
1983	-	-	-
1990	0.83	9.79	4.99
1995	0.74	10.86	3.58
2001	0.91	14.06	3.18
2009	0.98	16.15	4.77
2009 MOE	0.23	2.28	0.51
2017 Orig.	1.19	15.26	3.15
2017 Orig. MOE	0.73	1.59	0.18

Note:

- Totals in all tables can include cases that were not included in any table subcategory.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- Trip miles and travel times were calculated using actual trips to and from work as reported in the travel day file.
- The usual mode is defined as the means of transportation usually used to go to work in the week prior to the travel day.

- Average commute speed was calculated using only those trips with both trip mileage and travel time information present.
- Average commute trip length was calculated using only those records with trip mileage information present.
- Commute time for public transit includes total trip time, including access and egress. Wait time is not included.
- Unlike the Census Journey-to-Work data, the NHTS does not include “work at home” in usual commute data.
- Public transit includes local bus, commuter bus, commuter train, subway, trolley, and streetcar.

Table 28 shows the trends in the average speed of commutes in areas of different population sizes. On average, larger metro areas have slower speeds—both as a result of more congestion, but also more workers commuting by non-auto means of travel, like transit and walking.

Table 28. Trends in Average Commute Speed by MSA Size (Miles per Hour)
1977, 1983, 1990, 1995 NPTS, and 2001, 2009, and 2017 NHTS

	MSA Size					
	Rural, Not in MSA	Less than 250,000	250,000 to 499,999	500,000 to 999,999	1 to 2.9 million	3 million and over
	All Modes (Including Private Vehicle)					
1977	-	25.8	26.5	26.5	27.5	20.0
1983	28.9	25.6	26.3	27.3	27.4	24.8
1990	32.0	29.7	30.4	31.4	30.2	27.7
1995	31.2	28.9	30.0	30.4	29.9	28.4
2001	31.9	28.5	28.3	28.8	27.9	25.4
2009	31.6	27.6	27.6	28.1	27.8	24.7
2009 MOE	0.8	0.8	0.2	0.9	0.7	0.5
2017 Orig.	27.6	24.8	25.3	24.5	23.8	20.5
2017 Orig. MOE	0.7	0.9	1.3	0.6	0.6	0.3
2017 Adj.	29.6	26.6	27.1	26.2	25.4	21.9
2017 Adj. MOE	0.7	0.9	1.4	0.6	0.6	0.4

Note:

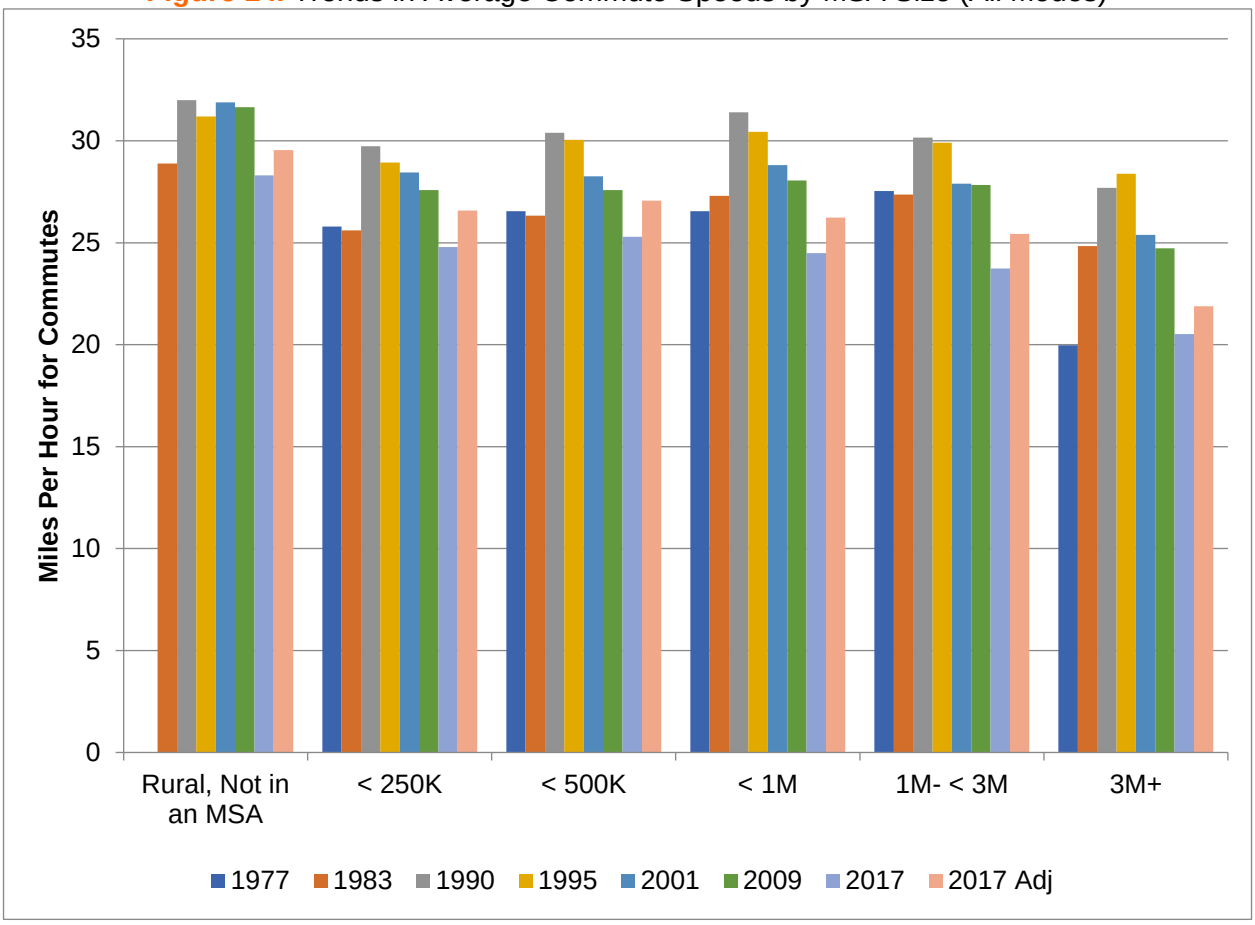
- Totals in all tables can include cases that were not included in any table subcategory.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).

- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- Trip miles and travel times were calculated using actual trips to and from work as reported in the travel day file.
- The usual mode is defined as the means of transportation usually used to go to work in the week prior to the travel day.
- Average commute speed was calculated using only those trips with both trip mileage and travel time information present.
- Average commute trip length was calculated using only those records with trip mileage information present.
- Commute time for public transit includes total trip time, including access and egress. Wait time is not included.
- Unlike the Census Journey-to-Work data, the NHTS does not include “work at home” in usual commute data.
- "Rural, Not in MSA" includes only full counties designated as rural. There may also be rural pockets included within MSA boundaries.
- The population size groups for 1977 - 1983 NPTS are MSA Size Groups. 1990 - 2001 are MSA Size Groups. 2009 - 2017 are CMSA size groups.

Figure 14 shows that the average speed of commuting by all modes has declined in all metro areas, regardless of size. Since 1990, the largest metro areas have seen the greatest decline in commute speed.

As mentioned earlier, trip distance was collected differently in the 2017 NHTS, which affects the trends in speed (see Appendix A). The 2017 adjusted values show higher speeds because the trip distance was adjusted to be more comparable to earlier surveys, while the reported time remained the same.

Figure 14. Trends in Average Commute Speeds by MSA Size (All Modes)



Note:

- Totals in all tables can include cases that were not included in any table subcategory.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- Trip miles and travel times were calculated using actual trips to and from work as reported in the travel day file.

- Average commute speed was calculated using only those trips with both trip mileage and travel time information present.
- Average commute trip length was calculated using only those records with trip mileage information present.
- Commute time for public transit includes total trip time, including access and egress. Wait time is not included.

8.0 TEMPORAL DISTRIBUTION

Table 29 shows the percentage of person trips by time of day. The 2017 data shows a notable increase in the percentage of trips during the morning peak period (6-9 am). However, the distribution of trips by time of day has remained about the same for many decades.

The 2017 survey data shows that almost half (47%) of all person trips start in the midday between 9 a.m. and 4 p.m., virtually the same as the estimates since 1995.

Table 29. Trends in the Distribution of Person Trips by Start Time of Trip

Time of Day	1983	1990	1995	2001	2009	2009 MOE	2017	2017 MOE
10 p.m. - 1 a.m.	4.0	4.1	3.5	2.9	2.6	0.13	2.3	0.07
1 a.m. - 6 a.m.	3.3	1.8	1.7	1.8	1.8	0.08	1.9	0.12
6 a.m. - 9 a.m.	14.4	12.5	13.8	14.4	15.0	0.21	16.6	0.21
9 a.m. - 1 p.m.	23.4	20.6	24.2	24.6	24.8	0.29	25.4	0.35
1 p.m. - 4 p.m.	20.8	20.7	22.1	22.1	22.4	0.34	22.1	0.33
4 p.m. - 7 p.m.	21.2	22.9	23.0	22.3	22.6	0.29	22.1	0.26
7 p.m.- 10 p.m.	12.3	13.2	11.8	11.7	11.0	0.23	9.8	0.24
ALL	100.0	100.0	100.0	100.0	100.0	-	100.0	-

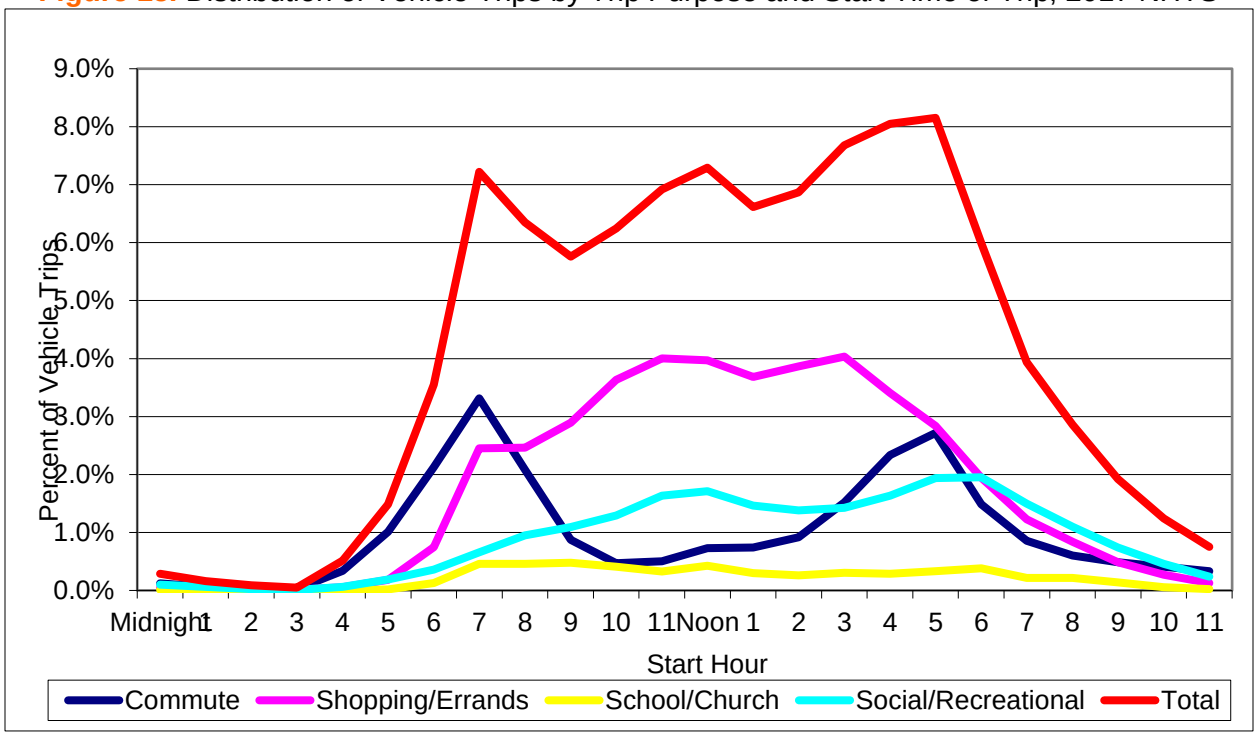
Note:

- Totals in all tables can include cases that were not included in any table subcategory.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.

Figure 15 shows vehicle trips by time of day and purpose. The data show that the morning and evening peak periods include not just commutes, but shopping and family errands (which includes dropping children at school), and other non-work trips. These vehicle trips add to the total number of vehicles traveling during the peak periods.

As expected, in 2017 most vehicle commutes started between 6 a.m. and 9 a.m. in the morning and between 4 p.m. and 7 p.m. More than half of vehicle trips for other purposes started between 9 a.m. and 4 p.m.

Figure 15. Distribution of Vehicle Trips by Trip Purpose and Start Time of Trip, 2017 NHTS



Note

- Totals in all tables can include cases that were not included in any table subcategory.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.

Table 30 displays trends for key travel characteristics for weekday and weekend travel.

Table 30. Trends in Travel Characteristics for Weekday vs. Weekend

Weekday									
Survey Year	Vehicle Trips per Driver	Percent Work Trips	Percent Non-Work Trips	VMT per Driver	Average Vehicle Trip Length	Average Time Spent Driving (in minutes)	Person Trips per Person	PMT per Person	Average Person Trip Length
1990	3.4	28%	72%	28.5	8.5	50.7	3.8	32.6	9.5
1995	3.8	32%	68%	33.5	8.9	59.5	4.4	37.7	8.6
2001	3.6	31%	69%	34.4	9.8	64.8	4.2	39.4	9.6
2009	3.2	31%	69%	30.6	9.6	59.8	3.9	35.8	9.4
2009 MOE	0.0	0.58	0.58	0.9	0.3	0.8	0.0	1.3	0.3
2017 Orig	2.9	31%	69%	26.9	9.3	59.0	3.5	35.3	10.2
2017 Orig MOE	0.0	0.48	0.48	1.5	0.5	0.9	0.1	2.0	0.6
2017 Adj.	-	-	-	29.6	10.3	-	-	38.0	10.9
2017 Adj. MOE	-	-	-	1.6	0.5	-	-	2.1	0.6
Weekends									
Survey Year	Vehicle Trips per Driver	Percent Work Trips	Percent Non-Work Trips	VMT per Driver	Average Vehicle Trip Length	Average Time Spent Driving (in minutes)	Person Trips per Person	PMT per Person	Average Person Trip Length
1990	2.9	10%	90%	28.4	10.0	46.1	3.6	40.6	11.5
1995	3.0	13%	88%	28.9	9.7	48.1	4.0	41.1	10.5
2001	2.9	11%	89%	28.7	10.2	52.4	3.9	42.3	11.2
2009	2.5	10%	90%	25.0	10.0	46.7	3.5	37.1	10.8
2009 MOE	0.1	0.65	0.65	1.1	0.5	1.3	0.1	3.3	1.0
2017 Orig	2.3	11%	89%	23.2	10.3	47.3	3.1	38.1	12.2
2017 Orig MOE	0.0	0.61	0.61	0.8	0.4	0.9	0.0	2.9	1.0
2017 Adj.	-	-	-	25.7	11.4	-	-	41.4	13.3
2017 Adj MOE	-	-	-	0.9	0.5	-	-	3.0	1.1

Note

- Totals in all tables can include cases that were not included in any table subcategory.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- Average time spent driving includes all drivers, even those who did not drive a private vehicle on the day in which the household was interviewed.
- Average trip length is calculated using only those records with trip mileage information present.
- "% Work Trips" also includes work-related business.

9.0 SPECIAL POPULATIONS

Table 31 shows that the estimates of travel for people aged 65 and older is a mixed bag: While reported vehicle trips per driver are lower than 2009 estimates, person trips and person miles of travel both show increases for older individuals.

On a daily basis, people aged 65 and older took significantly fewer vehicle trips per driver than the same age group in 2009, 2001, and 1995. This estimate includes all people who drive, whether they drove on the travel day or not.

The original estimate of miles driven by drivers aged 65 and older in 2017 is statistically the same as in 2009, 2001, and 1995—meaning that there has been virtually no change in the estimates. The adjusted estimate for 2017 is significantly higher than the 2009 estimate.

Likewise, the original estimate for the average vehicle- and person-trip length are statistically the same as in 2009, while the adjusted estimate is higher.

However, the original and adjusted estimates for the daily PMT are significantly higher in 2017 than in 2009, but statistically the same as the estimate of PMT for people 65 and older in 2001. In addition, the reported number of person trips per person (including those who travel and those who do not) remains exactly the same as the 2009 estimate.

Tables 32a, 32b, and 32c display additional characteristics for older persons.

Table 31. Daily Travel Statistics of People 65 and Older

Daily Travel Statistics (65 and Older)	1983	1990	1995	2001	2009	2009 MOE	2017	2017 MOE
Vehicle Trips per Driver	1.66	2.27	2.94	2.84	2.67	0.05	2.55	0.04
Percent Work Trips	10.2%	4.8%	8.5%	6.2%	10.6%	0.97	8.6%	0.69
Percent Non-Work Trips	89.8%	95.2%	91.5%	93.8%	89.4%	0.97	91.4%	0.69
VMT per Driver	9.80	14.83	19.56	21.13	19.69	0.75	20.21	1.21
2017 Adjusted VMT per Driver	-	-	-	-	-	-	22.47	1.35
Average Vehicle Trip Length	5.92	6.61	6.69	7.51	7.46	0.29	7.91	0.41
2017 Adjusted Vehicle Trip Length	-	-	-	-	-	-	8.80	0.45
Average Time Spent Driving (in minutes)	-	30.83	42.89	49.11	46.37	1.26	48.29	1.48
Person Trips per Person	1.8	2.5	3.4	3.4	3.2	0.1	3.2	0.0
PMT per Person	12.2	19.9	25.2	28.0	25.0	1.2	31.6	2.6
2017 PMT per Person adj.	-	-	-	-	-	-	34.3	2.5
Average Person Trip Length	6.7	8.1	7.5	8.4	8.0	0.4	9.9	0.7
2017 Adjusted Person Trip Length	-	-	-	-	-	-	10.3	0.8

Note:

- Totals in all tables can include cases that were not included in any table subcategory.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO. This and other methods changes in the data series are outlined in Appendix B.
- Average time spent driving includes all drivers, even those who did not drive a private vehicle on the day in which the household was interviewed.
- Average trip length is calculated using only those records with trip mileage information present.
- "% Work Trips" also includes work-related business.

Table 32a. Selected Data for Older Persons

Survey Year:	Characteristic	All				
		All Age Groups 50 and Older	50-59	60-69	70-79	80 and older
2009	Percent Drivers	87.9%	93.7%	91.4%	83.0%	61.7%
	2009 MOE	0.52	0.69	0.89	1.32	2.17
2017	Percent Drivers	87.3%	91.2%	89.5%	85.8%	63.5%
	2017 MOE	0.40	0.38	0.41	1.52	2.23
2009	Vehicle Miles/Driver	26.83	31.51	27.63	18.77	12.04
	2009 MOE	0.67	1.29	1.18	1.14	1.03
2017	Vehicle Miles/Driver Orig.	24.43	28.28	24.22	20.08	12.94
	2017 MOE for Orig VMT/Driver	0.79	1.47	1.09	1.35	1.83
2017	Vehicle Miles/Driver Adj.	27.01	31.15	26.81	22.33	14.41
	2017 MOE for Adj. VMT/Driver	0.88	1.63	1.21	1.50	2.04
2009	Percent with Zero Vehicles Available	7.7%	4.9%	6.8%	10.3%	17.6%
	2009 MOE	0.40	0.54	0.92	1.28	1.84
2017	Percent with Zero Vehicles Available	7.7%	6.9%	7.7%	7.1%	12.6%
	2017 MOE	0.40	0.32	0.74	0.93	1.30
2009	Percent Who Did Not Travel	17.3%	11.2%	14.9%	24.3%	38.0%
	2009 MOE	0.60	0.71	0.94	1.58	2.91
2017	Percent Who Did Not Travel	19.7%	14.6%	18.4%	24.8%	37.3%
	2017 MOE	0.59	1.09	0.71	0.89	2.50
2009	Percent with Disability	17.5%	10.9%	15.8%	22.6%	41.3%
	2009 MOE	0.53	0.91	0.87	1.30	2.11
2017	Percent with Disability	13.9%	8.0%	11.2%	15.1%	48.9%
	2017 MOE	0.40	0.71	0.82	1.06	1.43

Table 32b. Selected Data for Older Men

Survey Year	Characteristic	Men				
		All Men 50 and Older	50-59	60-69	70-79	80 and older
2009	Percent Drivers	93.2%	*95.7%*	*95.1%*	90.8%	77.4%
	2009 MOE	0.50	*0.67*	*0.94*	1.42	2.76
2017	Percent Drivers	91.2%	92.4%	*92.4%*	91.6%	77.6%
	2017 MOE	0.52	0.68	*0.97*	1.24	1.64
2009	Vehicle Miles/Driver	33.55	37.63	34.62	26.51	16.98
	2009 MOE	1.14	1.76	2.25	2.18	2.20
2017	Vehicle Miles/Driver Orig.	30.06	33.85	30.14	25.72	16.42
	2017 MOE for Orig VMT/Driver	1.24	2.03	2.21	2.06	2.64
2017	Vehicle Miles/Driver Adj.	33.22	37.26	33.36	28.61	18.28
	2017 MOE for Adj. VMT/Driver	1.38	2.25	2.46	2.28	2.94
2009	Percent with Zero Vehicles Available	5.2%	4.5%	5.2%	5.4%	9.0%
	2009 MOE	0.47	0.67	1.09	1.27	2.84
2017	Percent with Zero Vehicles Available	6.1%	6.5%	6.4%	4.5%	6.7%
	2017 MOE	0.58	0.84	1.26	1.07	1.64
2009	Percent Who Did Not Travel	14.3%	10.8%	12.8%	18.3%	31.2%
	2009 MOE	0.83	1.11	1.13	1.87	3.90
2017	Percent Who Did Not Travel	16.9%	13.2%	15.9%	21.7%	31.5%
	2017 MOE	0.82	1.31	1.02	1.38	3.48
2009	Percent with Disability	14.4%	9.9%	13.5%	18.6%	34.2%
	2009 MOE	0.71	1.19	1.26	1.70	2.95
2017	Percent with Disability	11.6%	7.1%	9.5%	12.7%	44.9%
	2017 MOE	0.47	1.02	0.85	1.68	3.77

Table 32c. Selected Data for Older Women

Survey Year	Characteristic	Women				
		All Women 50 and Older	50-59	60-69	70-79	80 and older
2009	Percent Drivers	83.3%	*91.8%*	*88.2%*	77.1%	52.4%
	2009 MOE	0.86	*1.19*	*1.52*	1.97	2.73
2017	Percent Drivers	83.8%	*90.0%*	*87.0%*	81.0%	54.3%
	2017 MOE	0.93	*0.78*	*1.18*	2.30	3.82
2009	Vehicle Miles/Driver	20.33	25.29	20.92	11.84	7.76
	2009 MOE	0.86	1.82	1.18	0.79	0.81
2017	Vehicle Miles/Driver Orig.	19.05	22.79	18.62	14.93	9.66
	2017 MOE for Orig VMT/Driver	0.94	1.59	1.26	2.23	2.36
2017	Vehicle Miles/Driver Adj.	21.07	25.12	20.62	16.61	10.76
	2017 MOE for Adj. VMT/Driver	1.38	1.75	1.39	2.49	2.63
2009	Percent with Zero Vehicles Available	9.9%	5.2%	8.3%	14.0%	22.7%
	2009 MOE	0.61	0.94	1.18	1.90	2.23
2017	Percent with Zero Vehicles Available	9.1%	7.3%	8.9%	9.1%	16.4%
	2017 MOE	0.82	0.63	1.26	1.19	2.34
2009	Percent Who Did Not Travel	20.0%	11.7%	16.7%	28.9%	42.1%
	2009 MOE	0.84	0.83	1.40	2.14	3.42
2017	Percent Who Did Not Travel	22.1%	15.9%	20.6%	27.3%	41.1%
	2017 MOE	0.69	1.25	0.80	1.33	3.01
2009	Percent with Disability	20.2%	11.8%	17.9%	25.7%	45.4%
	2009 MOE	0.72	1.26	1.21	2.01	2.77
2017	Percent with Disability	15.9%	9.0%	12.7%	17.0%	51.5%
	2017 MOE	0.62	0.89	1.41	1.57	1.97

Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- Percent with Disability is based on respondents who answered that they had a temporary or permanent condition that makes it difficult for them to travel outside of the home.

Overall, younger drivers report driving fewer miles per capita (including drivers who drove on the travel day and those who did not) in 2017 compared to the trend data. However, the estimates for both the original and adjusted VMT in 2017 are statistically the same as the 2009 estimates across the board (within the margin of error) (Table 33).

In urbanized areas, where the majority of the U.S. population lives, the declines in VMT per day are significant for 16-24 year old's compared to 2001 but not 2009.

As the data series shows, VMT per driver in these age groups has not significantly declined between 2017 and 2009, but the estimates are statistically lower than 2001.

Table 33. Vehicle Miles of Travel (VMT) Trends for Younger People by Urban or Rural Household Location

Survey Year	People in All Areas				
	Daily VMT	16-24	25-34	35-44	45+
1990	25.1	22.4	31.9	30.9	19.4
1995	28.5	22.6	33.5	34.6	25.0
2001	29.5	22.4	32.8	36.4	27.3
2009	25.8	17.4	26.8	32.5	25.2
2009 MOE	0.6	1.1	1.7	1.8	0.8
2017 Orig.	22.5	14.9	26.0	27.1	22.2
2017 Orig. MOE	1.0	1.2	4.8	1.8	0.7
2017 Adj.	24.8	16.4	28.6	29.8	24.6
2017 Adj. MOE	1.1	1.3	5.3	1.9	0.8

Table 33. Vehicle Miles of Travel (VMT) Trends for Younger People by Urban or Rural Household Location (continued)

Survey Year	People in Urban Areas				
	Daily VMT	16-24	25-34	35-44	45+
1990	22.4	20.2	28.5	27.4	17.0
1995	25.0	19.7	30.1	30.3	21.5
2001	27.3	20.9	30.7	33.3	25.0
2009	23.1	14.6	24.5	30.1	22.4
2009 MOE	0.7	1.0	2.0	2.1	0.8
2017 Orig.	20.8	13.3	25.0	25.2	20.2
2017 Orig. MOE	1.2	1.5	5.3	1.5	0.8
2017 Adj.	23.0	14.6	27.5	27.7	22.3
2017 Adj. MOE	1.4	1.7	5.9	1.6	0.8
Survey Year	**People in Rural Areas**				
	Daily VMT	**16-24**	**25-34**	**35-44**	**45+**
1990	29.6	26.9	38.7	36.9	23.0
1995	34.6	28.2	40.1	41.6	30.8
2001	37.6	28.2	42.1	47.1	34.6
2009	34.2	25.8	34.6	40.5	34.2
2009 MOE	1.2	3.1	2.6	3.2	1.7
2017 Orig.	30.3	22.4	32.8	37.0	30.3
2017 Orig. MOE	0.8	3.1	3.0	4.4	1.6
2017 Adj.	33.5	24.6	36.1	40.7	33.4
2017 Adj. MOE	0.8	3.5	3.3	4.8	1.8

Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- In 1995, VMT and vehicle trips with "To or From Work" as a trip purpose are believed to be overstated.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- “Rural” encompasses all territory not included within a Census Bureau classified urban area.

Table 34 shows select travel characteristics by urban and rural areas.

Table 34. Travel Characteristics of People in Urban and Rural Areas, 2017 NHTS

Characteristics	Living in Urban Areas	MOE Urban	Living in Rural Areas	MOE Rural
Overall Percent (People 16 and older)	82.2%	0.52	17.8%	0.52
Percent Drivers	85.9%	0.54	91.9%	0.51
Percent Workers	62.0%	0.42	57.9%	0.37
Percent with Household Members Younger than 21 Years Old	42.5%	0.78	44.8%	0.35
Percent with Zero Vehicles Available	7.6%	0.22	2.3%	0.11
Percent Who Did Not Travel on Travel Day	16.3%	0.75	20.0%	0.16
Person Trips by Age Group	**Living in Urban Areas**	**MOE Urban**	**Living in Rural Areas**	**MOE Rural**
All 16 and older	3.5	0.05	3.2	0.08
16-19 Years Old	2.8	0.14	2.7	0.20
20-34	3.4	0.09	3.2	0.17
35-54	3.9	0.07	3.5	0.10
55-64	3.6	0.06	3.4	0.20
65 and Older	3.2	0.05	3.0	0.10

Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.
- “Rural” encompasses all territory not included within a Census Bureau classified urban area.

One of the major new conveniences for U.S. households is online shopping and home delivery of many types of goods. The data series added a question about online purchases delivered to the home for the first time in the 2009 NHTS. The question also changed slightly in 2017.

In 2009, the survey asked: “In the last month, how many of your online purchases were delivered to your home?”, while in 2017 the question was: “In the past 30 days, how many times did you purchase something online and have it delivered?"

Assuming the answers are comparable, the estimate of the number of deliveries in an average month has doubled between the two survey time points (Table 35).

The data indicates that online shopping is more prevalent in households with children, especially older teens and young adults (children aged 16-21). However, households with small children and those without children—including those headed by older individuals—had larger increases in the number of online purchases delivered to the household.

Table 35. Average Number of On-Line Purchases and Deliveries to U.S. Households in the Last Month

Household Type by Presence of Children	2009 NHTS		2017 NHTS	
	Purchases Delivered to the Household	2009 MOE	Purchases Delivered to the Household	2017 MOE
All Households	2.4	0.1	4.9	0.1
Households Without Members <21	1.6	0.1	3.9	0.1
Households With Members Aged 5-15	3.7	0.2	6.9	0.1
Households With Members Aged 16-21	4.2	0.6	7.5	0.6

Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- The 2009 NHTS was the first time data was collected on home deliveries from Internet shopping and on-line purchases.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.

Table 36 displays select characteristics for users of transportation network companies.

Table 36. Characteristics of Users of Transportation Network Companies (Uber/Lyft), 2017 NHTS

Characteristic:	Used Rideshare	MOE	All Others	MOE
Overall Percent (16 and older)	9.8%	0.44	90.2%	0.44
Percent Drivers	87.6%	0.36	86.9%	0.37
Percent Workers	81.3%	0.40	59.1%	0.37
Percent Urban	96.5%	0.41	80.6%	0.85
Percent with Household Members Younger than 21 Years Old	36.4%	0.20	43.6%	0.64
Percent with Zero Vehicles Available	12.3%	0.08	6.0%	0.20
Percent Who Did Not Travel on Travel Day	10.2%	0.12	17.7%	0.72
Person Trips by Age Group:				
All 16 and older	4.0	0.20	3.4	0.04
16-19 years old	3.2	0.48	2.8	0.11
20-34	3.9	0.17	3.3	0.08
35-54	4.1	0.17	3.8	0.06
55-64	4.1	0.25	3.6	0.06
65 and Older	3.9	0.35	3.2	0.04

Note:

- Totals in all tables can include cases that were not included in any table subcategory, for instance people who did not report their age are included in the total persons, but not in any age category.
- 1990 NPTS data were adjusted to make them more comparable with later surveys.
- 2001 NHTS sample included children 0 to 4 in the survey. The data shown here exclude them to be comparable with other survey years.
- 2009 NHTS sample did not include households without landlines telephones (CPO households).
- 2017 NHTS sample was address-based and included more urban and CPO households. This and other methods changes in the data series are outlined in Appendix B.

APPENDIX A: CHANGES IN SURVEY METHODOLOGY AND THE ADJUSTMENT OF TRIP LENGTH ESTIMATES

Introduction

The 2017 National Household Travel Survey (NHTS) underwent a redesign of the survey methodology and sampling strategy. Although these improvements lowered respondent burden (web-based self-reports) and improved coverage (address-based sample selection), they make direct comparisons between the results of the 2017 NHTS and the 2009 and earlier surveys problematic. Any travel changes observed between the 2009 and 2017 surveys may reflect not only actual changes in travel during the period but also artifacts of differences in survey methodology and sampling, or some of both.

That is, any changes observed between the 2009 and 2017 travel data are presumably attributable to:

(1) Real changes in travel behavior,

(2) Shift from using interviewer-assisted interviewers to web-based self-reports (about 70% of respondents reported via web),

(3) Inclusion of households not sampled in 2009 (45% of completed households[2] in 2017 are cell phone only [CPO]), and

(4) Other improvements/changes in the 2017 survey methods.

The first part of this document summarizes the potential impact of the changes in methods and sampling in the 2017 NHTS that will be the subject of on-going research.

One specific change in the 2017 NHTS is an immediate and calculable impact on the survey estimates for trip distances. In the 2017 NHTS, researchers calculated trip distance via the shortest-path on the network from the geocoded origin of the trip to the geocoded destination. Previous surveys depended on the respondent to report the trip distance for each trip. The difference in trip distance reporting in 2017 NHTS impacts the estimation of average trip length by purpose and person miles of travel (PMT)/vehicle miles of travel (VMT) estimates for persons and households. The distance calculation estimates are in the second part of this document.

This document has two parts:

Part One presents a summary of a few of the important changes in methodology and protocols between the 2017 NHTS and earlier surveys (more detail is found in the User's Guide here: https://nhts.ornl.gov/assets/2017UsersGuide.pdf).

Part Two describes an effort researchers made to quantify the impact of the change in trip distance reporting and to calculate simple adjustment factors to bring the 2017 more in line with earlier estimates and outside sources (Highway Performance Monitoring System (HPMS) VMT).

[2] In 2009, a completed household was defined as having 50 percent of the adults complete the survey. In 2017 a completed household required 100 percent of household members 5 and older to have a completed survey.

The resulting "adjusted" estimates are displayed along with the original distance estimates in the tables in this report that include trip length, VMT, or PMT trends.

Users of the data series should spend the time to understand how the changes in methodology and sampling in the 2017 NHTS might impact the estimates in their analyses. Researchers should include the necessary cautions to readers of their reports and findings.

Part 1. Overview of Important Changes in Survey Methodology

For major population estimates, the change in methodology and sampling had little effect, as shown in Table A-1 (a reprint of Table 4 in Section 2). The notable exception is the difference in the estimate of total household-based VMT from the NHTS 2017 and other sources (HPMS), which is discussed in Part Two.

Table A-1 Comparison of NHTS 2017 to Other Sources (Thousands)

Variable	2017 NHTS	Other Sources	Percent Difference: Other Sources/NHTS
Households[3]	118,208	118,208	0%
Population[4]	321,419	321,419	0%
Drivers[5]	223,277	218,084	-2%
Workers[6]	156,988	151,144	4%
Vehicles[7]	222,579	231,490	4%
VMT[5]	2,105,882	2,638,583	25%

The population estimates match because researchers controlled them at the census division level during the weighting process. The weighting followed a similar protocol to the 2009 NHTS weighting process. This included the standard, best-practice methodology that is appropriate for any household survey, regardless of survey design or mode. The steps in weighting the survey data include:

- Computing base weights as the inverse of the selection probability from each sampled unit (in the case of 2017 NHTS this was the household address),
- Adjusting the base weights for eligibility and nonresponse, and

[3] Households - Census QuickFacts Table US Households 2011-2015
https://www.census.gov/quickfacts/fact/table/US/HSD410215#viewtop
[4] Population - Population in Occupied Housing Units, estimate 2016
https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml
[5]Drivers - 2015 estimate from Highway Statistics Table DL-22
https://www.fhwa.dot.gov/policyinformation/statistics/2015/dl22.cfm
[6] Workers - Source: Statista Civilian labor force in the United States from 1990 to 2016 (in millions)
https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF
[7] Vehicles and VMT - Light Duty Vehicles (short WB) plus Motorcycles plus (based on the 2002 VIUS) 85.6% of Light Duty Vehicles with wheelbases (WB) larger than 121 inches
http://www.fhwa.dot.gov/policyinformation/statistics/2015/vm1.cfm

- Trimming and post-stratifying (or raking) to known reliable external data sources such as the Census. The 2017 NHTS data were raked by month and day of week, along with demographic characteristics such as age, sex, race/ethnicity, and worker status. (The User's Guide provides more details on the weighting method: https://nhts.ornl.gov/assets/2017UsersGuide.pdf).

Researchers designed the 2017 NHTS to support state-, regional-, or city-level estimates only for areas that purchased additional samples (add-ons). The 2017 NHTS add-ons are:

- Arizona
- California
- Dallas-Ft. Worth, Texas
- Des Moines, Iowa
- Georgia
- Maryland
- New York
- North Carolina
- South Carolina
- Texas
- Tulsa, Oklahoma
- Waterloo, Iowa
- Wisconsin

The user is also cautioned not to attempt to estimate travel differences (e.g., between population groups, geographic areas, or between survey years) without calculating the confidence intervals to ensure statistically sound estimates.

Sample Design and Address-based Sampling

The random digit dialing (RDD) landline sample used in 2009 had coverage issues related to the growth in CPO households. In 2009, an estimated 25 percent of households nationwide did not have a landline, and these households were not included in the sample frame. To increase coverage the 2017 NHTS sample used an address-based sample frame, which included about 98 percent of U.S. households. About 45 percent of completed households in the 2017 NHTS are CPO (see definition of a completed household below).

There are important demographic differences between people in CPO households compared to landline households. For example, the CPO respondents in the 2017 sample were more likely racial/ethnic minorities and younger than respondents in landline households.

Mail-Out/Mail-Back Recruit

The 2009 and earlier surveys mailed preliminary information to the sampled households but depended on a telephone interviewer to recruit the households into the study. In 2017, households at the sampled address received a recruitment package that they completed and returned by mail in order to be included in the survey.

Definition of a Completed Household

In 2017, 100 percent of household members aged 5 and older had to provide information relating to their travel on the assigned travel day in order for the household to be included in the survey. In previous (1995-2009) surveys, if 50 percent of adults 18 and older in the household provided information about their travel, the household was included in the survey. Therefore, in 2017, some larger households have more burden to complete the survey compared to smaller

households. It should be noted that the earliest NHTS surveys (1990 and earlier) accepted proxy reports from one household adult for all other household members.

Web-Based Retrieval Questionnaire

In 2017, the majority (70%) of respondents participated via the web-based questionnaire. Previous NHTS surveys were administered by computer-assisted telephone interviewing (CATI) only and used a trained interviewer to lead respondents through the survey. Interviewers were therefore available to answer respondent questions and probe responses where needed. In the 2017 survey, only 30 percent of respondents completed by CATI (these respondents either called in or were contacted via telephone).

The mixed-mode nature of the 2017 NHTS resulted in different population groups utilizing different methods to complete the survey. The respondents who completed with an interviewer (CATI) were older, poorer, and on average less educated. A greater proportion of CATI respondents came from single-person households, households with no workers, rural households, and households with no vehicle or one vehicle.

In contrast, people who reported via the web-based retrieval were younger, had higher income, and were more educated. Web-based respondents were more likely from larger households, more likely urban, with one or more workers, and had higher vehicle ownership. People aged 55 and older reporting via the web were almost twice as likely to be a worker and more likely to work at home compared to the same aged respondents who completed by CATI.

The percentage of people reporting no travel also varied between the respondents completing via CATI or web. The data show that many more children under 16 (who all have their travel reported by proxy from a household adult) have no travel reports in the web-based format. At the other end of the age spectrum—people 65 and older—many fewer older respondents reported no travel on the web-based format. The differences in the proportion of people reporting no travel impacts the average trip rates.

Changes in the Questionnaire

The differences between the 2017 redesigned survey instrument and the 2009 instrument are in Table A-2. One difference was the use of a place-based reporting compared to trip-based. For example, in 2009 respondents were given the definition of a trip: “A trip is whenever you travel from one address to another.” In 2017, respondents were given the definition of a place: “A place is any location you go to, no matter how long you are there.”

Table A-2 Differences between 2009 and 2017 Travel Diary/Travel Log

2009 Diary
Where did you go?
What was the Location?
What time did you start and end each trip?
How did you travel?
How far was it? (blocks or miles)
2017 Travel Log
Where did you go next?
What time did you arrive at this place?
How did you get to this place?
How many people went with you to this place?
What time did you leave this place?
What did you do at this place?

Researchers changed the definition of a "trip" to allow reports of travel that began and ended at home (loop trips). This particularly influences walk and bike trends. In the 2017 NHTS, trips that began or ended at home were coded as a single trip. In 2009 and earlier surveys trips that began and ended at home were split into an outbound and inbound segment based on the farthest point. About 2 percent of trips were home-to-home loops. Most of these were walk and bicycle trips.

Researchers asked additional walk and bike questions in the 2017 NHTS.

2009:
Number of walk and bike trips.
2017:
Number of walk and bike trips.
Number of walk/bike trips for exercise.
What keeps you from walking/biking more often? (>0 AND NOT PROXY)

The 2017 NHTS also had additional trip prompts.

2009:
Interviewer prompted respondent at the end of trip roster:
So far, I have recorded {N} trip(s). Before we continue, did {you/SUBJECT} take any other walks, bike rides, or drives on {TRIPDATE}? Please include any other trips where {you/SUBJECT} used public transit or started and ended in the same place.
2017:
The survey displayed a pop-up prompt after the places roster for respondents:
- Did you include all places [$YOU] went on the assigned travel day, including short stops such as the dry cleaners or ATM?
- Participants provided two options (I Need to Add a Place / I'm done).
- Must select an option to advance.

These changes in the questionnaire wording, and the change in trip definition, may have impacted travel estimates, especially for walk and bike trips.

Part 2: Calculation of Differences in Trip Distance Reports

The 2017 NHTS collected trip distance based on the calculated shortest route between a valid geocoded origin and a valid address destination using an interface similar to Google maps. This marks a major change to the data series—previous surveys depended on the respondent to report the distance for each trip. The change in the calculation of trip distance impacts estimates of total PMT and VMT, as well as average person- and vehicle-trip lengths (including commute trip length). Analysts should use extreme caution in developing trends with these variables.

Purpose of the Trip Distance Assessment

To assess how these two measures of trip distance vary, the 2009 NHTS origin-destination data from the following add-on areas were geocoded and used to compute shortest distance paths using the same Google API used to compute trip distance in the 2017 NHTS:

- California
- Georgia
- New York State
- North Carolina
- South Carolina
- Texas
- Wisconsin

More than half a million (541,009) trips were assessed overall, including 352,565 vehicle (driver) trips (65%). Only vehicle trips were included in the analysis, because the 2017 estimate of VMT was lower than the HPMS estimate, and lower nominally compared to the 2001 and 2009 estimates. Researchers examined vehicle trips to understand how much the self-reported estimate differed from the calculated estimate by purpose. Interestingly, self-reported distances for work trips were closer to calculated (shortest-path) distances than self-reported distances for non-work purposes. Therefore, researchers analyzed work and non-work vehicle trips separately.

The distribution of the difference between self-reported and calculated vehicle trip distances showed some extreme values—self-reported distances that were more than twice as long or twice as short compared to the calculated distance. Extreme values can have a big impact on the mean estimates. Researchers examined these outliers further by the trip characteristics. The reported trip distance for these outliers skewed toward very short trips, over half were trips with reported distances of less than one mile.

The vehicle trips that had a difference between self-reported and calculated distance of +/- 100 percent as outliers were removed. With these outliers removed, the calculated distance in the 2009 dataset was shorter for both work and non-work trips (the raw data showed the opposite effect).

Next, researchers applied the mean difference in vehicle trip length estimates between self-reported and calculated trip distance in 2009 to the 2017 data (the percentage difference applied to work and non-work trips separately). The adjustment raised the 2017 overall VMT

estimate by 10.3 percent. This brings the 2017 VMT adjusted estimate above the estimate for 2009—showing growth in VMT between the two survey years.

They then compared the mean vehicle trip length—adjusted and original—to the estimates from previous surveys. The increases in average trip length were significant for most purposes (trips for shopping were nominally but not significantly longer). The overall difference was 7 percent for commute trips and 11 percent for trips of other purposes.

The Summary of Travel Trends includes both the original and adjusted estimate, along with the margin of error, to let data users decide on the appropriate estimate for their particular use.

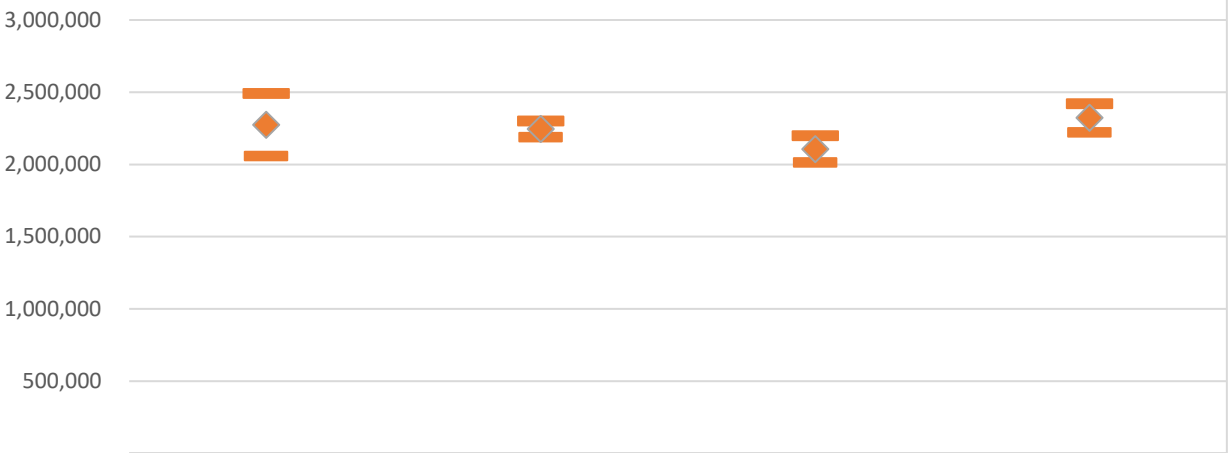
Background and Context

Though the "lower" estimate in 2017 for VMT is within the margin of error of the 2009 estimate and statistically the estimates for 2009 and 2017 VMT are not different (see Figure A-1), the total estimate of 2,105,882 million miles in 2017 was nominally 6 percent lower than the estimate in 2009.

Importantly, other sources of VMT estimates show that total VMT had grown in the period between 2009 and 2017. HPMS estimates in 2015 (the most recent year available) were 3,095,373 million miles of vehicle travel. The 2017 estimate for passenger travel was only 68 percent of that total (compared to 76% in 2009 and 81% in 2001).

The adjusted values for trip distance raises the nominal estimate of VMT above the nominal estimate for 2009 and within the margin of error of the 2001 estimate. Figure A-1 displays these estimates and the confidence limits at the 95 percent level.

Figure A-1 Estimates of VMT for 2001, 2009, and 2017 NHTS (original and adjusted)

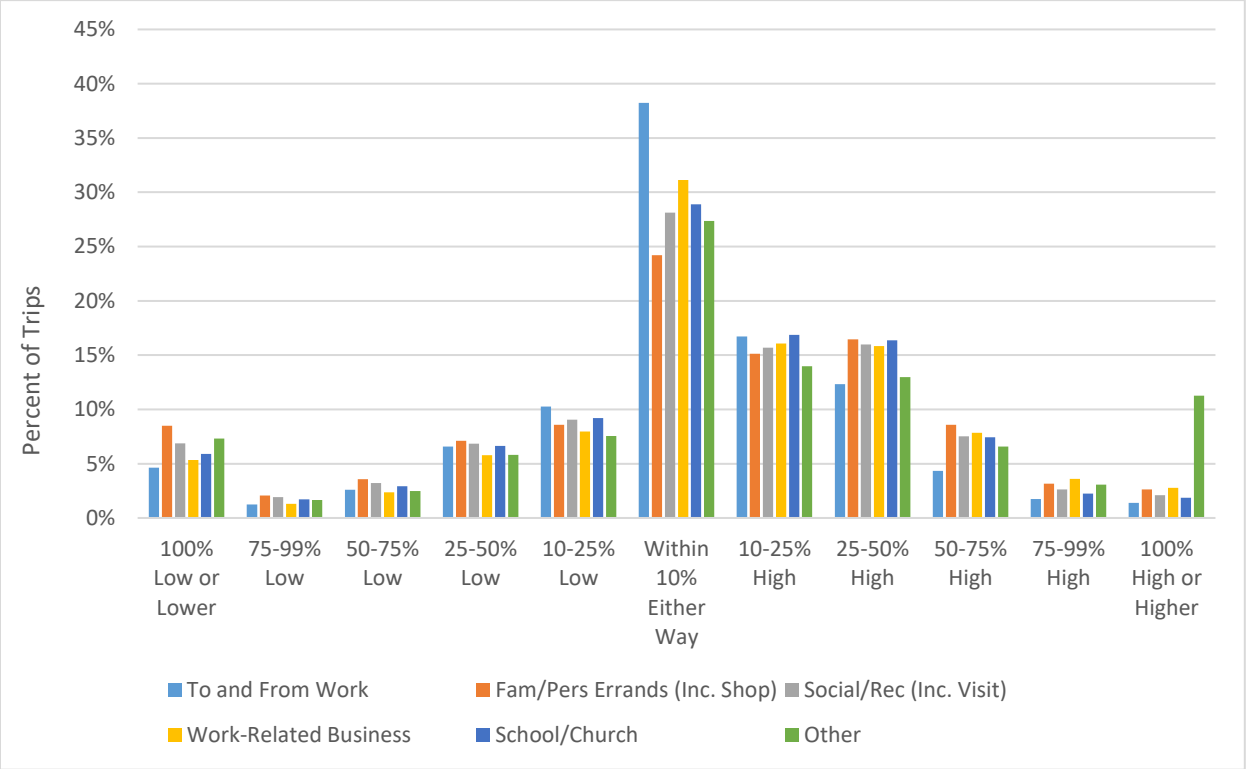


	2001 VMT	2009 VMT	2017 VMT Orig. Distance	2017 VMT Adj. Distance
High	2,491,535	2,301,276	2,197,419	2,419,900
Low	2,058,003	2,188,947	2,014,344	2,223,740
Estimate	2,274,769	2,245,111	2,105,882	2,321,820

Method and Approach

As shown in Figure A-2, the variation between reported and calculated distance was different for work and non-work trip purposes. Driver's reports for commute trip lengths were close to the shortest path calculated distance—a plurality of work trips had reported distance within +/- 10% of the calculated trip distance. On the other hand, self-reported distance for non-work trips were not as close to the calculated distance. However, social and recreational, errands and shopping, and other purposes all had similar distributions. Therefore, going forward the purposes were categorized as "work" and "non-work".

Figure A-2 Difference in Trip Length by Purpose

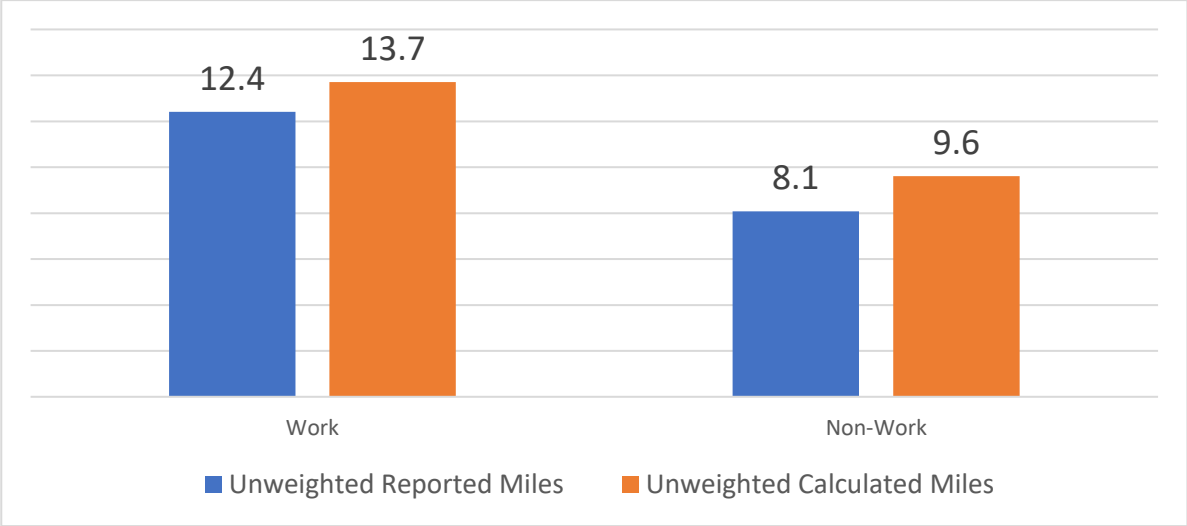


Examining the Distribution of the Data/Outliers

Figure A-3 displays the mean unweighted trip distances from the 2009 self-reported and calculated distance estimates. The calculated distance is about 10 percent higher for work trips and about 20 percent higher for non-work (using (CALC_DIST-TRPMILES)/TRPMILES))8. Remember, these are the distance estimates from the Google API run as the shortest path at the time the respondent entered a valid (geocoded) origin and destination for the trip.

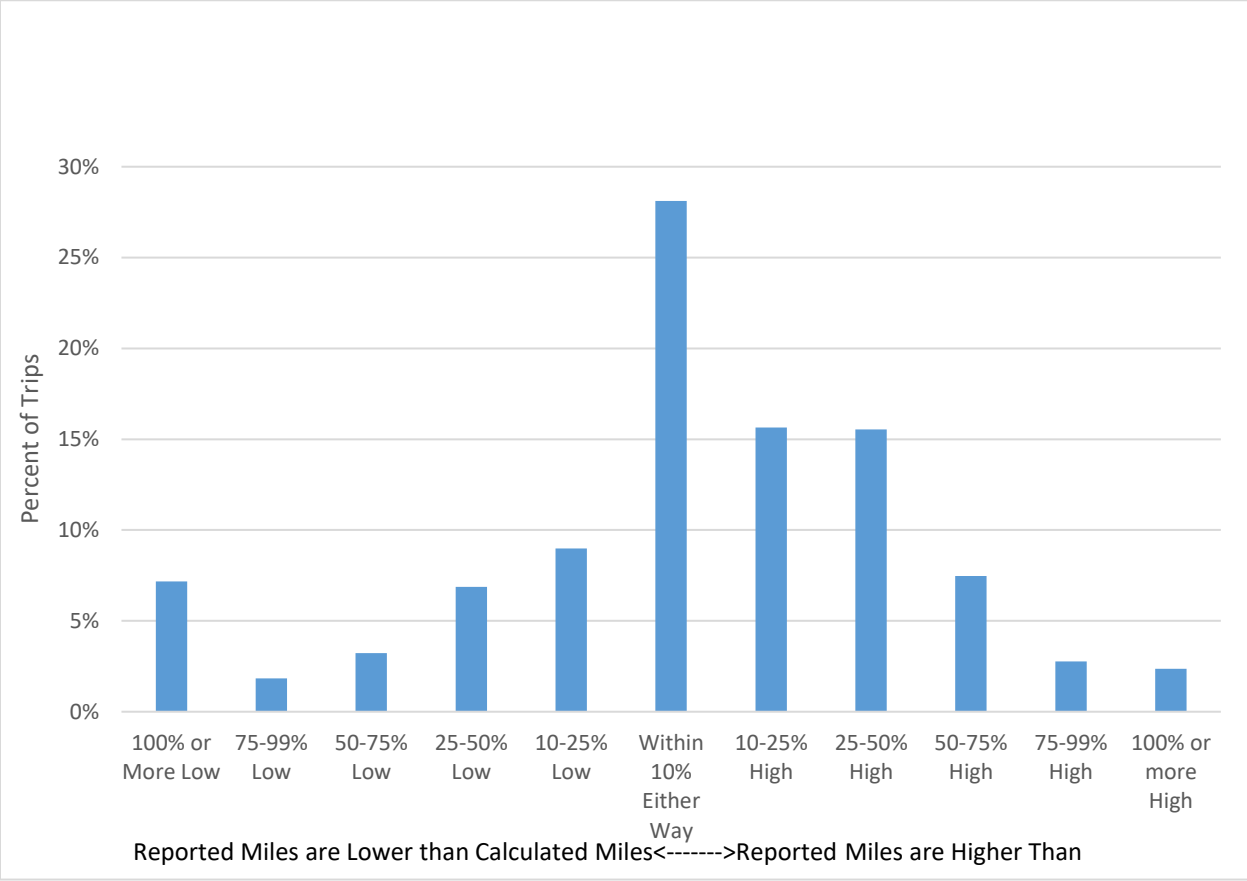
[8] The NHTS uses negative values to code legitimate skip and unreported (-1, -8, -9), and these must be removed to calculate correct means.

Figure A-3 Mean Distance for Work and Non-Work Trips by Two Methods: Uncapped



The “average” or means in data such as these are very sensitive to the number of extreme values (outliers). The difference between reported and calculated miles skews to the right (shown in Figure A-4) —meaning that in most cases reported miles were higher than calculated miles. Few of the values were on the extreme edges of the distribution (reported distances were more or less than 100% of the calculated distance).

Figure A-4 Distribution of the Percent Difference in Trip Length between Reported Miles and Calculated Miles



After several univariate analyses, researchers identified the trips with a difference between reported and calculated miles of more than 100 percent as potential outliers. Table A-3 shows the original and final number of records and the logic used for each step.

Table A-3 Number of Records Used In Analysis

Category	n	Logic
Geocoded Records	549,009	
With Reported Miles	532,243	TRPMILES>0
Driver Trips	349,305	TRPMILES>0 and DRVR_FLG='01'
Within Range	318,919	PCT_DIFF_MILES +/- 100% of Reported Miles
Removed as Outliers	30,386	
Outliers as a Percent of Driver Trips	8.7%	

The outliers skewed to the negative range, as shown in Figure A-5. The bottom graphic in Figure A-5 shows the distribution of trip records considered outliers. The blue bar across the bottom represents a frequency of “one”, with occasional spikes ranging from two to six reported trips with the same extreme difference between self-reported and calculated trip distance.

Figure A-5 Distribution of Distance Outliers, 2009 NHTS

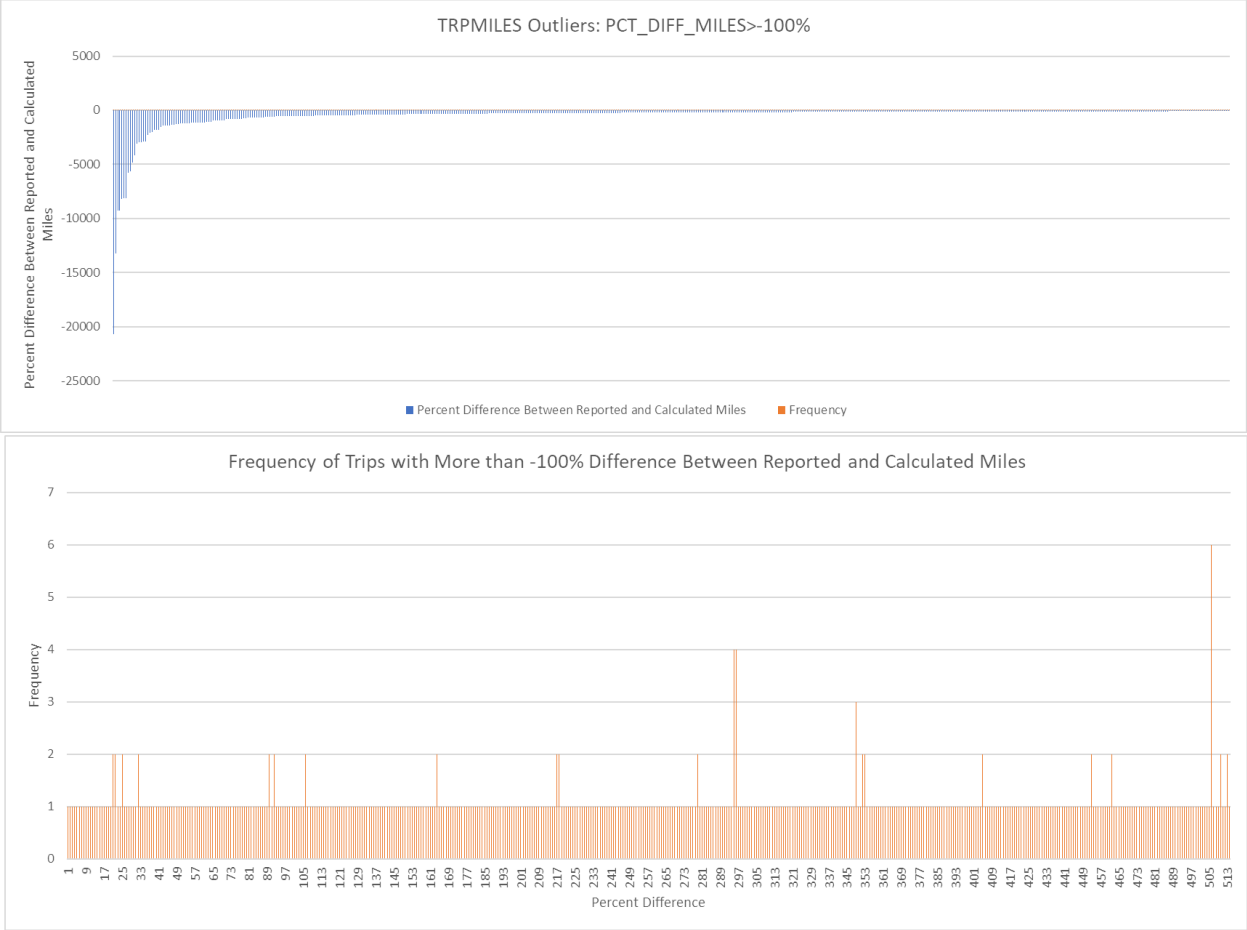
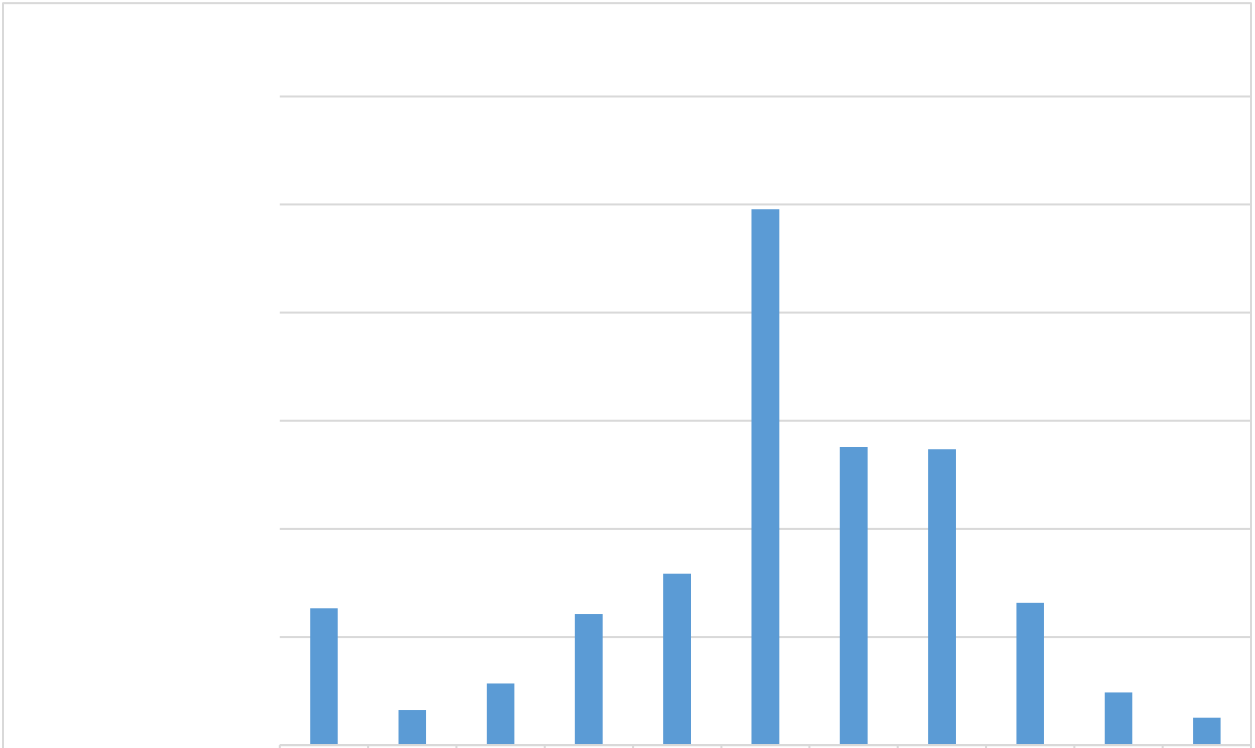


Figure A-6 shows the number of trip records in each bin. Note again that the outliers skew to the negative side: trips with self-reported distances that were less than half the calculated distance were 83 percent of all outliers (25,327 of 30,386). Altogether, the 30,386 total records with self-reported distances of more or less than 100 percent of the calculated distance represented 8.7 percent of driver trips in the analysis dataset.

Figure A-6 Distribution and Frequency of Trips by Percent Difference between Reported and Calculated Miles



	100% or More Low	75-99% Low	50-75% Low	25-50% Low	10-25% Low	Within 10% Either Way	10-25% High	25-50% High	50-75% High	75-99% High	100% or More High
Number of Trip Records	25,327	6,464	11,386	24,233	31,703	99,145	55,152	54,759	26,350	9,727	5,059

Researchers examined the outliers further to identify the types of trips that had large differences between reported and calculated distances.

Table A-4 shows some characteristics between the trips considered outliers (greater than +/- 100% difference between reported and calculated trip distance) and all others. Households that

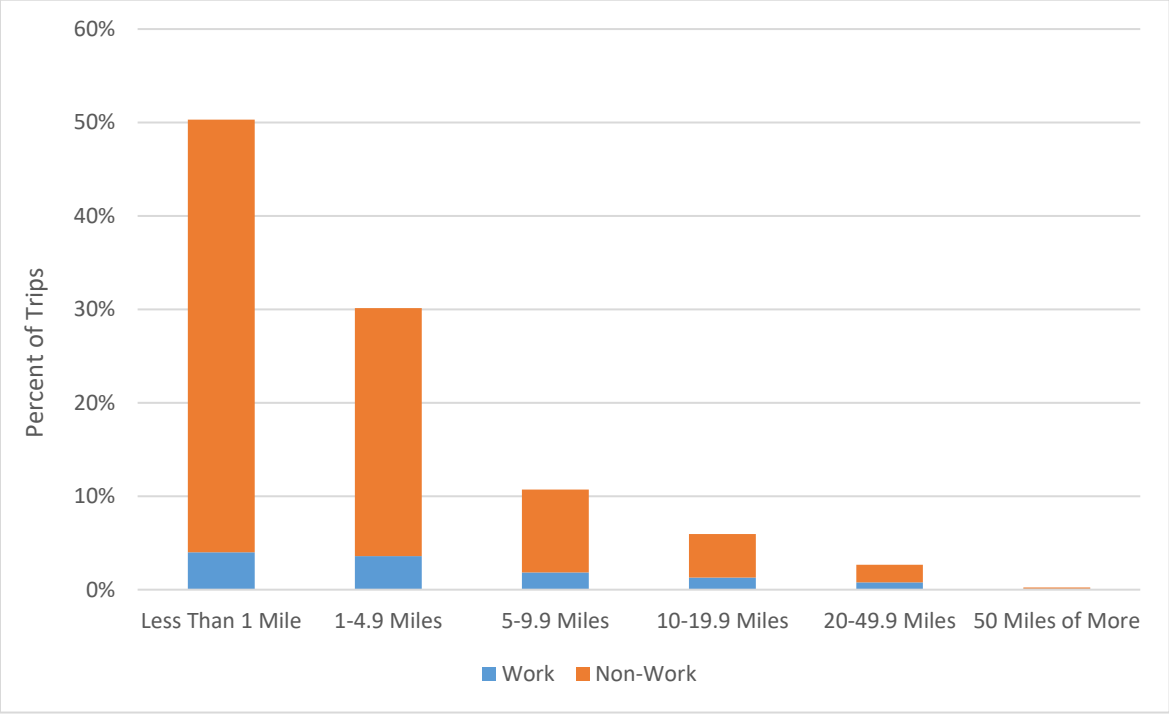
were rural and people who did not start their day at home were more likely to have trips that were considered outliers.

Table A-4 Characteristics of Trips with Extreme Differences between Reported and Calculated Miles

Characteristics of Trips with Extreme Difference Between Reported and Calculated Distance, 2009 Selected Areas (Driver Trips Only)		
	Outliers	Non-Outliers
Reported by Proxy	12.5%	13.7%
Household is Rural	39.4%	28.7%
Purpose is Non-Work	88.8%	81.7%
Trip was a Weekend Trip	22.0%	25.7%
Person did Not Start the Travel Day at Home	8.4%	2.8%

Of the outliers, fully half were under one mile in length (recall that only driver trips are included in this analysis). Overall, almost nine out of ten (88.3%) were for non-work purposes. Figure A-7 shows the distribution of the outliers by trip length and purpose.

Figure A-7 Characteristics of Outliers



Analysis of Trip Distance

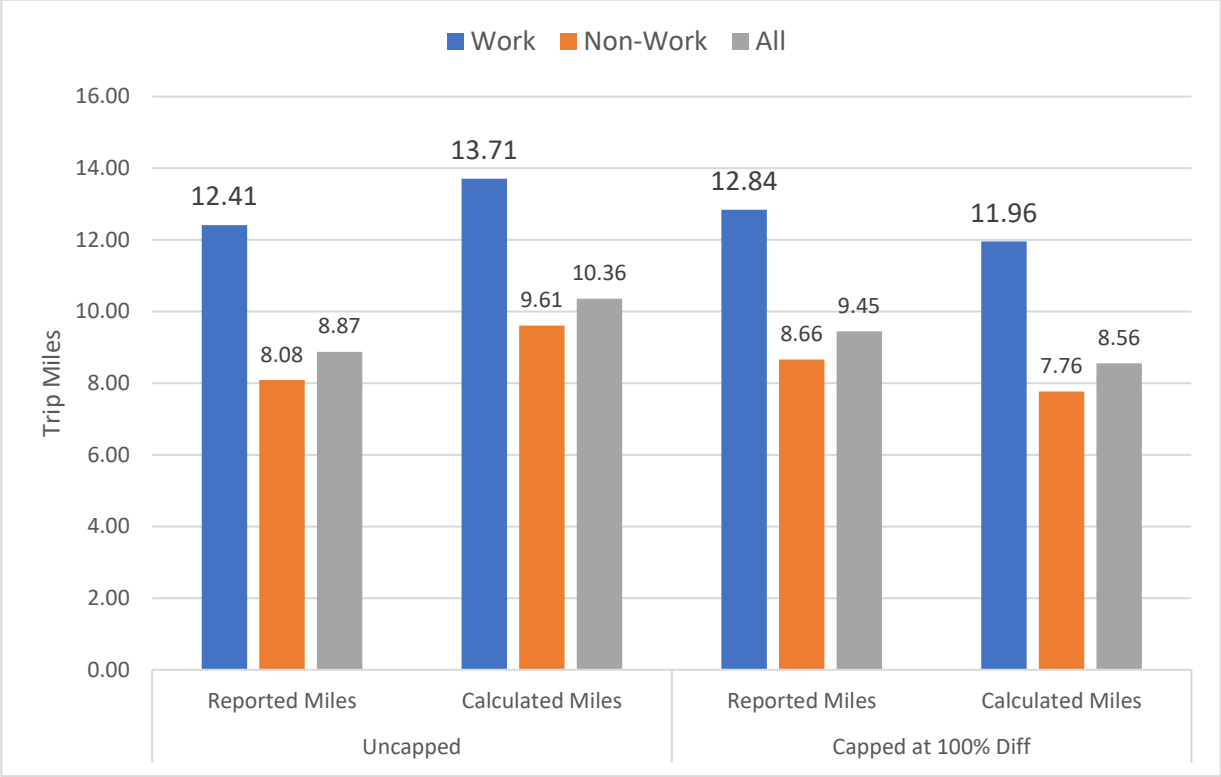
Figure A-8 shows the difference in the mean estimate of trip distance for the analysis areas in the 2009 NHTS for all reported vehicle trips (349,305 records), and for the same set of records with outliers removed (318,919 records).

With the outliers removed, the relationship changed. With extreme values removed, the average trip distance using the shortest-path calculation is less than the average using reported miles. Table A-5 and Figure A-8 show the capped and uncapped values. Note that this calculation uses “calculated miles” as the base because it is common to both datasets.

Table A-5 Percent Difference Between Calculated and Reported Miles

Category A	Category B	Work	Non-Work	All
Uncapped	Reported Miles	12.41	8.08	8.87
	Calculated Miles	13.71	9.61	10.36
Capped at 100% Diff	Reported Miles	12.84	8.66	9.45
	Calculated Miles	11.96	7.76	8.56
	Difference	0.88	0.89	0.89
Percent Diff	(Diff./calculated miles)	7.35%	11.51%	10.41%

Figure A-8 Mean Distance for Work and Non-Work Trips: Raw Data and Outliers Removed

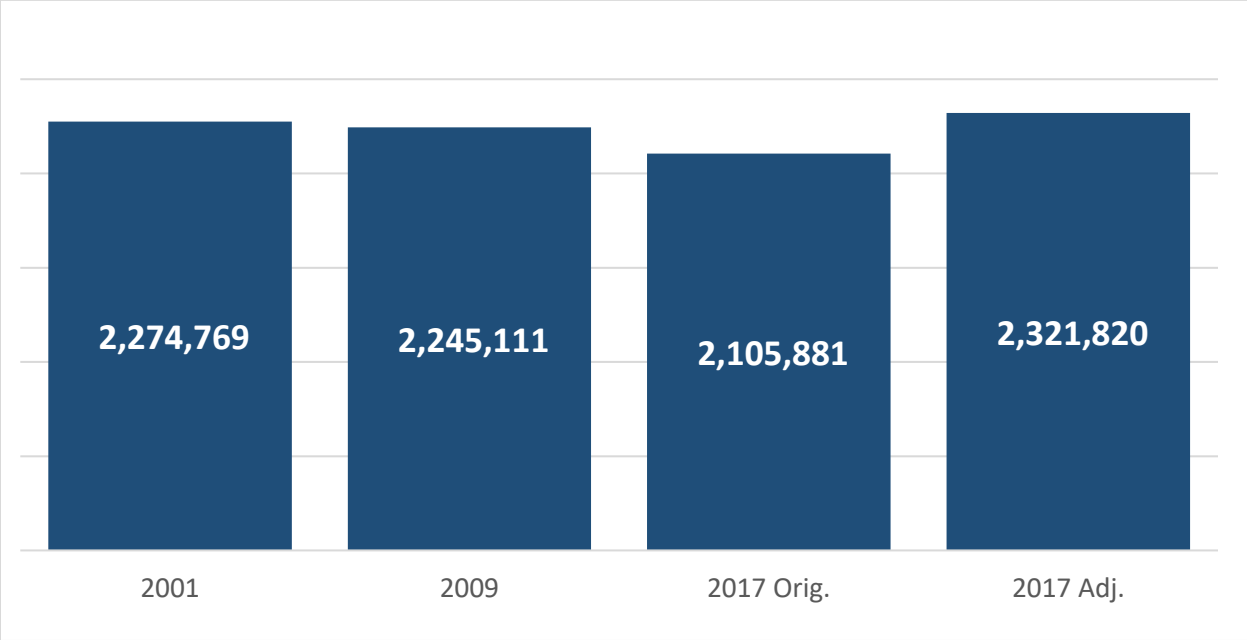


Testing the Effect on 2017 NHTS VMT Estimate

Researchers tested the effect of adjusting the disaggregate trip miles (at the trip level) by these factors on the estimates of VMT for 2017. That is, the calculated trip miles in the 2017 NHTS trip file (vehicle trips) was adjusted at the trip level by a factor of 1.0735 for work trips and 1.1151 for non-work trips (based on the calculations in Table A-3). This adjustment to each vehicle trip distance was then weighted by the individual trip record weight (MILE_ADJ*WTTRDFIN) to obtain weighted total estimate of household-based VMT. In addition, they added a new mode of travel in 2017 NHTS (rental cars, including Car2Go and ZipCar)—to the estimate.

The adjusted estimate of trip distance for vehicle trips added 10.3 percent to the total estimate for household-based VMT in 2017. Figure A-9 shows the 2001, 2009, 2017 original, and 2017 adjusted VMT estimates.

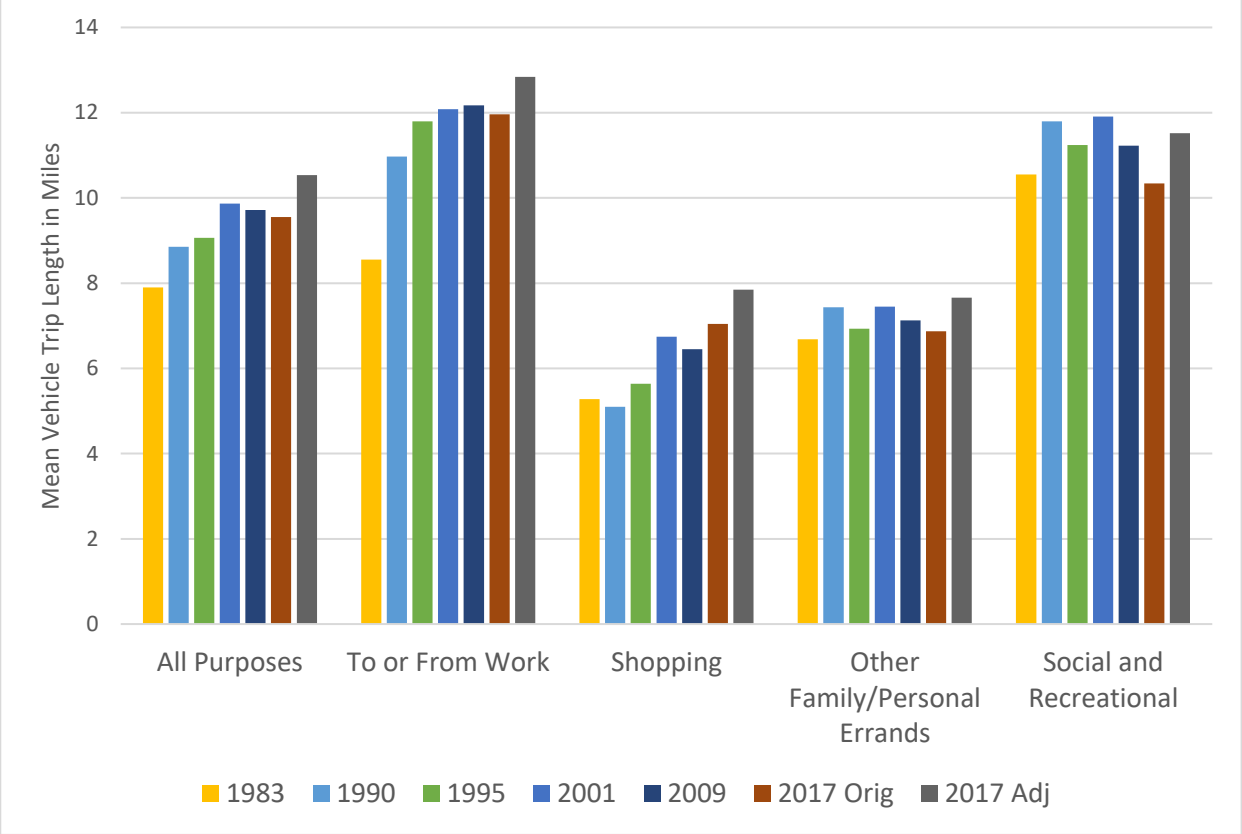
Figure A-9 Trends in VMT Estimates, 2009, 2017 and 2017 Adjusted



Trends in Trip Length Estimates by Purpose

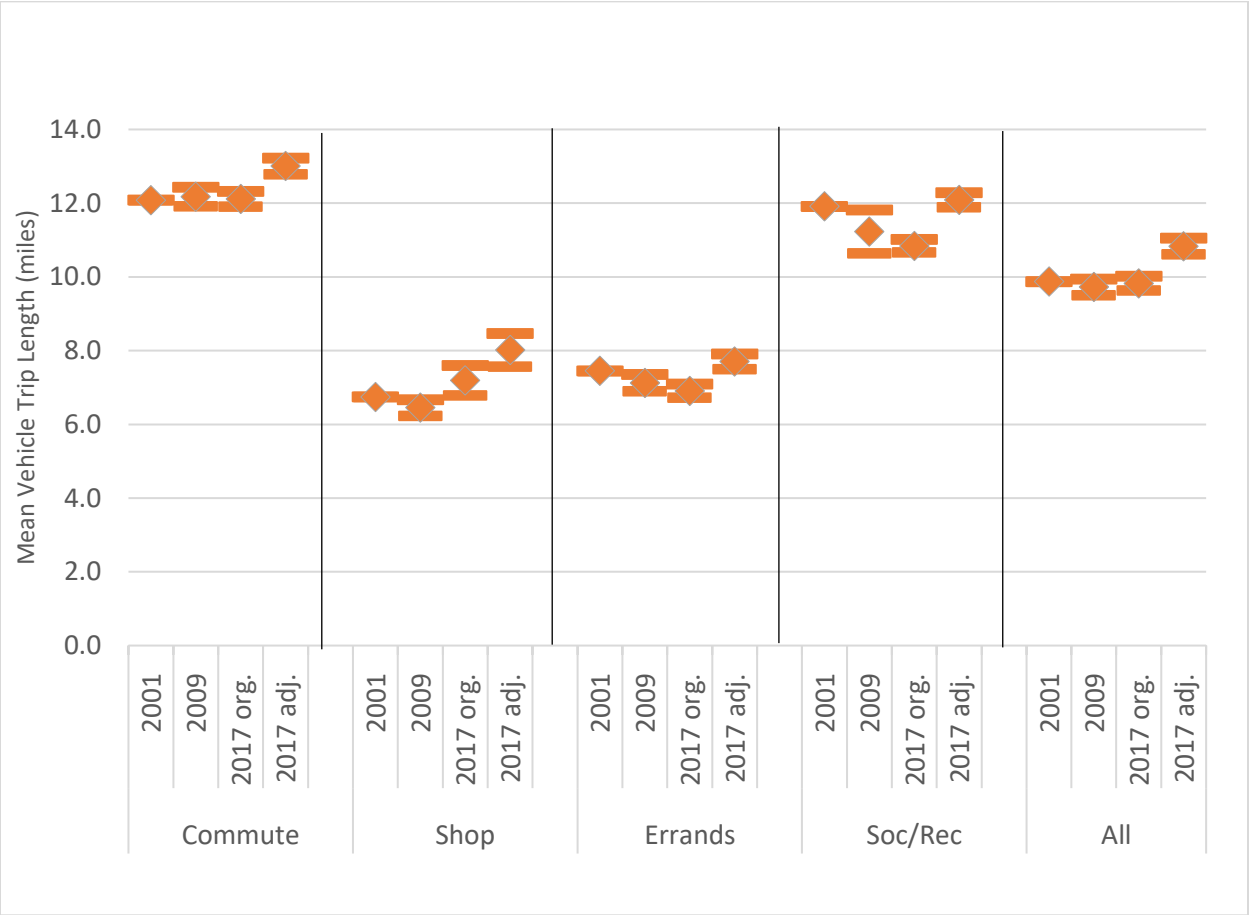
Researchers compared the adjusted vehicle trip length estimates to the original estimates in the 2017 NHTS and previous surveys for major trip purposes (see Figure A-10). For each major purpose category, the adjusted data are noticeably higher than the original estimates. (The data for this table is also shown in Table 6 of the 2017 Summary of Travel Trends).

Figure A-10 Trends in Mean Vehicle Trip Length by Purpose



Researchers tested the mean trip lengths from the original distance measure and adjusted distance measure for significance. As shown in Figure A-11, the adjusted trip length estimates are significantly higher than previous estimates for commute trips, social/recreational trips, and overall. Shopping trips, while nominally longer (7.2 miles original to 8.0 miles adjusted), are not statistically different between 2009 and 2017.

Figure A-11
Mean Vehicle Trip Length by Purpose with Confidence Intervals, 2001, 2009, 2017 Original and 2017 Adjusted



Conclusion

The 2017 NHTS obtained estimates of trip distance using a Google API shortest-path route distance between a geocoded origin and a geocoded destination. This is a major difference compared to previous surveys which depended on the driver's estimate of trip distance for each reported trip. The impact of this change resulted in a low estimate of VMT in 2017, compared to previous estimates and other sources (HPMS).

To assess the impact on the estimate of vehicle trip distance obtained by these two different methods, researchers calculated trip distances for a sub-set of 2009 (add-on) data from the geocoded origins and destinations using the same Google API method as that used in 2017. The analysis showed that the different methods of obtaining trip distance between 2017 NHTS and the earlier surveys resulted in a nominal decrease the estimates of vehicle trip lengths and VMT for the 2017 NHTS.

The estimate of vehicle trip lengths from the two methods (self-reported and calculated) varied by trip purpose. Commuters who reported the trip distance to work (in the 2009 NHTS) were

closer to the calculated shortest-path distance obtained by Google API (within 7%). However, for other trip purposes, the self-reported distances were over 11 percent different compared to calculated shortest-path distances. Researchers developed an adjustment factor based on the percentage difference between calculated and self-reported vehicle trip distance for work and non-work purposes. They then adjusted the 2017 NHTS vehicle trip lengths by this factor for work and non-work trips.

The adjusted estimates resulted in higher VMT estimates overall, and longer vehicle trip lengths for most purposes (shopping trips were nominally but not significantly longer after the adjustment). The 2017 NHTS Summary of Travel Trends report provides both the original and adjusted vehicle trip distance for the user.

The adjusted mileage estimates for vehicle trips will also affect other estimates, such as PMT, and comparisons of trip length by mode. Therefore, including both the adjusted and original estimates in the Summary of Travel Trends documentation will offer the most flexibility to the NHTS user community.

History of Adjusting NHTS Data

As a reference, when the methods changed between the 1990 NPTS (which used a recall of "yesterday") and the 1995 NPTS (which used a two-stage survey with a travel diary) the earlier survey was given an "adjustment" (in that case applied to the weights) to bring the trip reporting in line with the 1995 NPTS.

The adjusted data were provided on the dataset and in the 1995 documentation along with the original estimate until 2001, when the Summary of Travel Trends dropped the original estimate for 1990 and only included the adjusted estimates. The documentation of the adjustment is found in the 1995 Summary of Travel Trends, Appendix 2 "Adjustment of the 1990 NPTS Data": http://nhts.ornl.gov/1995/Doc/trends_report.pdf

APPENDIX B: KEY CHANGES

Key Changes in NHTS Survey Methodology and Content								
	1969	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Approximate Sample Size (Number of Households)	15,000	18,000	6,500	18,000 national and 4,300 add-on	21,000 national and 21,000 add-on	26,000 national and 40,000 add-ons	26,000 national and 125,000 add-on (Combined into single sample)	26,000 national and 104,000 add-on (Combined into a single sample)
	1969	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Sample Selection	Outgoing panels of Census Quarterly Housing Survey	Outgoing panels of Census Current Population Survey	Outgoing panels of Census Current Population Survey	Random Digit Dialing (RDD) Telephone sample	RDD Telephone sample	RDD Telephone sample	RDD Telephone sample	Address-based sample
	1969	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Interview Method	In-home interview with some telephone follow-up	In-home interview with some telephone follow-up	In-home interview with some telephone follow-up	One stage: computer-assisted telephone interviewing (CATI) recruit and recall of travel day	Two stage: CATI recruit-mail out diary-CATI collection	Two stage: CATI recruit-mail out diary-CATI collection	Two stage: CATI recruit-mail out diary-CATI collection	Two-stage: Mail-out recruit plus web-based self-report or CATI retrieval
	1969	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Pre-Contact/Incentive	Pre-Interview Letter	Pre-Interview Letter	Pre-Interview Letter	Pre-Interview Letter	Advance letter and $2 per person with diary	Advance letter with $5 and $2 per person with diary	Advance letter with $5 and $2 per person with diary	Advance letter with $2 plus $5 per person plus $20 post-completion

Key Changes in NHTS Survey Methodology and Content (continued)								
	1969	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Diary ”Memory Jogger”	None: Respondent recalled “yesterday”	None: Respondent recalled “yesterday”	None: Respondent recalled “yesterday”	None: Respondent recalled “yesterday”	Diary as a memory jogger	Diary as a memory jogger	Diary as a memory jogger	Diary as a memory jogger
	1969	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Trip Rostering to Reduce Item Nonresponse	None	None	None	None	Full day trip rostering before collecting trip detail	Full day trip rostering before collecting trip detail	Full day trip rostering before collecting trip detail	Full day trip rostering before collecting trip detail
	1969	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Eligible Persons	Household members aged 5 and older	Household members aged 5 and older	Household members aged 5 and older	Household members aged 5 and older	Household members aged 5 and older	All household members	Household members aged 5 and older	Household members aged 5 and older
	1969	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Usable Household Definition	At least one adult member of the household	At least one adult member of the household	At least one adult member of the household	At least one adult member of the household	At least half the adult members of the household	At least half the adult members of the household	At least half the adult members of the household	100% of all household members aged 5 and older

Key Changes in NHTS Survey Methodology and Content (continued)								
	1969	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Proxy Rules	An Adult household member reported all trips (excluding bike and walk trips) made by household members between the ages of 5 to 13 years	An Adult household member reported all trips (excluding bike and walk trips) made by household members between the ages of 5 to 13 years	An Adult household member reported all trips (excluding bike and walk trips) made by household members between the ages of 5 to 13 years	An Adult household member reported all trips made by household members between the ages of 5 to 13 years. Adult proxy allowed	Proxy reports required for 13 and under. Parental approval for 14- to 15- year olds. Adult proxy from diary allowed	Proxy reports required for 13 and under. Parental approval for 14- to 15- year olds. Adult proxy from diary after 3 days	Proxy reports required for 13 and under. Parental approval for 14- to 15- year olds. Adult proxy from diary after three days	Whether travel day report was via a proxy was self-reported in the web-based retrieval. Proxy flag is carried on the person record
	1969	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Travel Day Trip Definition	Travel within a defined area (such as a strip mall or shopping mall) not counted	Travel within a defined area (such as a strip mall or shopping mall) not counted	Travel within a defined area (such as a strip mall or shopping mall) not counted	Travel within a defined area (such as a strip mall or shopping mall) not counted	Any stop from one address to another, including trips to change transportation mode	Any trip from one address to another, mode changes not included (access and egress asked separately)	Any trip from one address to another, mode changes not included (access and egress asked separately)	Any trip from one address to another, including trips to change transportation mode

Key Changes in NHTS Survey Methodology and Content (continued)								
	1969	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Reporting Prompts	None	None	Prompts to include walking and bike trips, to lunch, stopping at a gas station, etc.	Prompts for forgotten trips	Prompts for forgotten trips	Prompts to include walk/bike trips and trips that started and ended in the same place	Prompts to include walk/bike and trips that started and ended in the same place. Added prompts to include transit	Prompts to include incidental trips/stops plus walk, bike rides and trips that started and ended in the same place
	1969	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Walk and Bike Coding	Collected walk and bike trips by respondents aged 14 and older	Collected walk and bike trips by respondents aged 14 and older	Collected walk and bike trips by respondents aged 14 and older	Collected walk and bike trips by all respondents	Collected walk and bike trips by all respondents	Collected walk and bike by all respondents. Split home-to-home trips to geocode trip location	Collected walk and bike by all respondents. Split home-to-home trips to geocode trip location	Collected walk and bike by all respondents, allowed home-to-home trips (loop trips)

Key Changes in NHTS Survey Methodology and Content (continued)								
	1969	1977	1983	1990	1995	2001	2009	2017
Trip Verification (verifying joint trips reported by other household members)	None	None	Manual checks across household member's travel	Interviewer instructed to check across household member's travel	CATI program checked across household members	CATI program checked across household members	CATI program checked across household members	CATI and web-based systems checked across household members. Also checked as part of the QC and corrected with household recontact as necessary
	1969	1977	1983	1990	1995	2001	2009	2017
Geocoding	None	None	None	None or limited manual coding	Limited manual geocoding	Extensive post-survey GIS-based geocoding	Online real time geocoding during interview, followed by post processing GIS coding	Real-time geocoding of each trip destination from a map interface. Shortest network-path distance calculated by Google between every geocoded origin and destination

Key Changes in NHTS Survey Methodology and Content (continued)								
	1969	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Weighting	Raking to control totals	Raking to control totals	Nonresponse and noncoverage adjustments included in weight development	Nonresponse and noncoverage adjustments included in weight development	Raking to control totals, within household nonresponse adjustment	Nonresponse adjustment, several stages of weighting, and trimming. Changes to the cells used for raking based on nonresponse follow-up survey	Nonresponse adjustment, several stages of weighting, and trimming. Changes to the cells used for raking based on cell phone only sample	Nonresponse adjustment, several stages of weighting, and trimming. Address-based sample weighted to geography. Raking variables consistent with 2009
	1969	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Travel Day Trip Purpose	There were 10 trip purposes plus “Other”, respondent selected the “Main" purpose of trip to code return home segment	There were 21 trip purposes, respondent selected the “Main" purpose of trip to code return home segment	There were 10 trip purposes plus “Other”, respondent selected the “Main" purpose of trip to code return home segment	There were 10 trip purposes plus “Other”, respondent selected the “Main" purpose of trip to code return home segment	There were 17 trip purposes plus “Other”, FHWA coded “Main" purpose for return home and included a separate tour file	There were 36 trip purposes, FHWA coded “Main" purpose for return home and included a separate tour file	There were 36 trip purposes, FHWA coded “Main" purpose for return home and included a separate tour file	There were 19 purpose codes. FHWA coded “Main" purpose for return home trips

Key Changes in NHTS Survey Methodology and Content (continued)								
	1969	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Vehicle Detail	Only included automobiles as household vehicles	Included all motor vehicles in household: pickups, vans, motorcycles, etc.	Included all motor vehicles in household: pickups, vans, motorcycles, etc.	Included all motor vehicles in household: pickups, vans, motorcycles, etc.	Coded SUVs separately, but not Hybrid or electric	Coded SUVs separately, but not Hybrid or electric	Coded Hybrid/alt fuel for all vehicle classes. Coded Light Electric Vehicles, but did not count them as household vehicles.	Coded Hybrid/alt fuel for all vehicle classes. Coded Light Electric Vehicles, but did not count them as household vehicles.
	1969	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Odometer Readings	None	None	None	None	Two readings collected by contacting respondent by phone or mail	Two readings collected multi-modal (Internet, mail, 800 number)	One reading collected at time of interview	One reading collected at time of interview
	1969	**1977**	**1983**	**1990**	**1995**	**2001**	**2009**	**2017**
Long-Distance Component	None	Included 2-week travel period for trips of 75 miles or more	Included 2-week travel period for trips of 75 miles or more	Included 2-week travel period for trips of 75 miles or more	Included 2-week travel period for trips of 75 miles or more	Included 28-day travel period (long distance)	None	Some add-ons asked questions related to long-distance for their specific areas

Key Changes in NHTS Survey Methodology and Content (continued)								
	1969	1977	1983	1990	1995	2001	2009	2017
Other Notes		NPTS and National Travel Survey (long distance) combined			Major shift in methods from recall of travel day to two-stage survey with pre-mailed diary	NPTS and American Travel Survey (long-distance) combined		Major shifts in methods from RDD/CATI to address-based sample and web-based retrieval. See Appendix A and User's Guide for more detail
	1969	1977	1983	1990	1995	2001	2009	2017
Add-Ons	None	None	None	New York MPO	New York State	Baltimore MPO	California	Arizona
				Connecticut	Massachusetts	Des Moines, IA MPO	Florida	California
				Indianapolis MPO	Oklahoma and Tulsa, Oklahoma	Hawaii	Georgia	Des Moines Area MPO
					Puget Sound	Kentucky	Indiana	Georgia
						Lancaster, PA MPO	Iowa	Indian Nations Council of Governments
						New York State	New York State	Iowa Northland Regional COG
						Oahu HI MPO	North Carolina	Maryland
						Texas	South Carolina	New York State
						Wisconsin	South Dakota	North Carolina

Key Changes in NHTS Survey Methodology and Content (continued)								
	1969	1977	1983	1990	1995	2001	2009	2017
							Tennessee	South Carolina
							Texas	Wisconsin
							Vermont	Texas
							Virginia	North Central Texas COG
							Wisconsin	
							Chittenden County MPO	
							Linn County RPC	
							Maricopa Association of Governments	
							Pima County MPO	
							Piedmont Regional Transportation	
							Omaha-Council Bluffs Metro Area Planning Agency	

APPENDIX C: TRAVEL CONCEPTS AND GLOSSARY OF TERMS

Travel Concepts

Person Trip

A movement in the public space between two identifiable points. In 2017, NHTS trips that begin and end at home are included as one trip record and flagged as "loop" trips. These primarily include walks, jogs, and bike rides that in the past were divided into an outbound portion (geocoded to the farthest point) and an inbound portion. In 2017, the entire "loop" trip is included as one unit. Each record in the trip file represents one trip.

For example, two household members traveling together in one car are counted as two person-trips. Three household members walking to the store together are counted as three person-trips. In 2017 NHTS, a jogger who leaves home and jogs around the neighborhood and back home is counted as one (loop) trip.

Person Miles of Travel (PMT)

The number of miles traveled by each person on a trip.

For example, if two people traveling together take a 6-mile subway trip to the airport, that trip results in 12 person-miles of travel. A 4-mile van trip with a driver and four passengers counts as 16 person-miles of travel (4 people times 4 miles).

Vehicle Trip

A trip by a single privately-operated vehicle (POV) regardless of the number of persons in the vehicle.

For example, two people traveling together in a car would be counted as one vehicle trip. Four people going to a restaurant in a van is considered one vehicle trip.

Note: To be considered a vehicle trip in NHTS, the trip must have been made in a POV, namely a household-based car, van, sport utility vehicle (SUV), pickup truck, other truck, recreational vehicle, motorcycle or other POV. The vehicle does not need to belong to the household—in 2017 a category for rental cars was added to the mode list, and are included in estimates of private vehicle travel (including services like Car2Go and ZipCar).

Trips made in other highway vehicles, such as buses, streetcars, taxis (including Uber/Lyft), and school buses are collected in the NHTS, but these are shown as person trips by those modes. The design of the NHTS is such that it does not serve as a source for vehicle trips in modes using other highway vehicles, because there is no way to trace the movement of these vehicles throughout the day. Those interested in vehicle trips by buses, taxis, etc., need to use a data source that relies on reports from the fleet operators of those vehicles. The National Transit Database of the Federal Transit Administration is one such source.

Vehicle Miles of Travel (VMT)

One vehicle mile of travel is the movement of one privately operated (POV) vehicle for one mile, regardless of the number of people in the vehicle.

For example, when one person drives her car 12 miles to work, that equals 12 vehicle miles of travel. If two people travel 3 miles by pickup, that equals 3 vehicle miles of travel.

The same definition of household vehicles is used. For NHTS data, vehicle miles are restricted to the same POVs as vehicle trips, that is a household-based car, van, SUV, pickup truck, other truck, recreational vehicle, or other POV, including rental car.

Vehicle Occupancy

For NHTS data, vehicle occupancy is generally computed as person miles of travel per vehicle mile (referred to as the travel method). Note that the other commonly used definition of vehicle occupancy is persons per vehicle trip (referred to as the trip method).

Because longer trips often have higher occupancies, the distance-based method generally yields a higher rate than the trip-based method. The calculation of the distance-based method requires that trip distance be included in the record. In 2017, every geocoded origin and destination pair had a calculated shortest-path distance appended to the trip record. Some trips may be missing trip distance; therefore, vehicle occupancy using distance is calculated on a slightly smaller number of trips than the trip method.

Glossary of Terms

This glossary provides the most common terms used in this report and the NHTS survey, and definitions of those terms. These definitions are provided to assist the user in the interpretation of the NHTS data and tables in this report.

Adult

For NHTS, this is defined as a person 18 years or older.

Census Region and Division

The U.S. Census Bureau divides the states into four regions and nine divisions. Note that the divisions are wholly contained within a region (i.e., region lines do not split division lines). The regions and their component divisions are:

Northeast Region:

- New England Division: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
- Middle Atlantic Division: New Jersey, New York, Pennsylvania

Midwest Region:

- East North Central Division: Illinois, Indiana, Michigan, Ohio, Wisconsin
- West North Central Division: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota

South Region:

- South Atlantic Division: Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia
- East South Central Division: Alabama, Kentucky, Mississippi, Tennessee
- West South Central Division: Arkansas, Louisiana, Oklahoma, Texas

West Region:

- Mountain Division: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming
- Pacific Division: Alaska, California, Hawaii, Oregon, Washington

Destination

For travel day trips, the destination is the end-point of the reported trip.

Driver

A driver is a person who operates a motorized vehicle. NHTS does not specifically ask about license status.

Employed (Worker)

A person is considered a worker/employed if they worked for pay, either full time or part time, during the week before the interview.

Education Level

The number of years of regular schooling completed in graded public, private, or parochial schools, or in colleges, universities, or professional schools, whether day school or night school. Regular schooling advances a person toward an elementary or high school diploma, or a college, university, or professional school degree.

Household

A group of persons whose usual place of residence is a specific housing unit; these persons may or may not be related to each other. The total of all U.S. households represents the total civilian non-institutionalized population.

Household Income

Household income is the money earned by all family members in a household, including those temporarily absent. Annual income is the income earned 12 months preceding the interview.

Household Members

Household members include all people, whether present or temporarily absent, whose usual place of residence is in the sample unit. Household members also include people staying in the sample unit who have no other usual place of residence elsewhere and does not include anyone who usually lives somewhere else or is just visiting, such as a college student away at school.

Household Vehicle

A household vehicle is a motorized vehicle that is owned, leased, rented or company-owned and available to be used regularly by household members. Household vehicles include vehicles used solely for business purposes or business-owned vehicles, so long as they are driven home and can be used for the home to work trip, (e.g., taxicabs, police cars, etc.). Household vehicles include all vehicles that were owned or available for use by members of the household during the travel day, even though a vehicle may have been sold before the interview. Vehicles excluded from household vehicles are those that were not working and were not expected to be working, and vehicles that were purchased or received after the designated travel day.

Means of Transportation

A mode of travel used for going from one place (origin) to another (destination). A means of transportation includes private and public modes, as well as walking.

The following transportation modes, grouped by major mode, are included in the NHTS data.

Private Vehicle

- Car: A privately owned and/or operated licensed motorized vehicle including cars and station wagons. Leased and rented cars are included if they are privately operated and not used for picking up passengers in return for fare.
- Van: A privately owned and/or operated van or minivan designed to carry 5 to 13 passengers, or to haul cargo.

- Sport utility vehicle: A privately owned and/or operated vehicle that is a hybrid of design elements from a van, a pickup truck and a station wagon. Examples include a Chevrolet Blazer, Ford Bronco, Jeep Cherokee, or Nissan Pathfinder.
- Pickup truck: A pickup truck is a motorized vehicle, privately owned and/or operated, with an enclosed cab that usually accommodates two to three passengers, and an open cargo area in the rear. Later model pickups often have a back seat that allows for total seating of four to six passengers. Pickup trucks usually have the same size of wheel-base as a full-size station wagon. This category also includes pickups with campers.
- Motorcycle/moped: This category includes large, medium, and small motorcycles and mopeds. Electric Bicycles are not included.
- Golf cart/Segway: This category consists of self-powered small vehicles, generally light electric vehicles, and any two-wheeled motorized personal vehicle consisting of a platform for the feet mounted above an axle and an upright post surmounted by handles.
- RV (motor home, ATV, snowmobile): An RV or motor home includes a self-powered recreational vehicle that is operated as a unit without being towed by another vehicle (e.g., a Winnebago motor home). This category includes all terrain vehicles and snowmobiles.

Public Transportation

- Public or commuter bus: This category includes buses that are part of transit systems, or a private service buses operating on a fixed schedule to serve commuters.
- Subway/elevated/light rail/streetcar: Any transit service operated on a fixed rail or guide way system, vehicles that run on a fixed rail system powered by electricity obtained from an overhead power distribution system, and any other
- Amtrak/commuter rail: This category includes all commuter trains and passenger trains.
- City-to-city bus (Greyhound/Megabus): This category includes all passenger buses operating between population centers.
- Paratransit/dial-a-ride: This category includes publicly operated on-call transit services for qualified individuals.

Non-Motorized

- Walk: This category includes walking and jogging.
- Bicycle: This category includes bicycles of all speeds and sizes, including electric bikes.

Other Modes:

- Airplane includes commercial airplanes and smaller planes that are available for use by the public in exchange for a fare. Private and corporate planes and helicopters are also included.
- Boat/ferry/water taxi: This includes travel by ships, cruise ships, passenger lines and ferries, sailboats, motorboats and yachts including water taxi.
- Taxi/limo (including Uber/Lyft): This category includes the use of a mobility service by a passenger for fare, including traditional and ride-hailing services. The taxi category does not include rental cars if they are privately operated.
- Private/charter/tour/shuttle bus: This includes privately operated large or shuttle buses that are operated for a fare.

Metropolitan Statistical Area (MSA) — Geographic areas of more than 50,000 persons managed by the Office of Management and Budget to categorize official population estimates. Counties and county equivalents are combined based on social and economic integration with its designated urban center. 2017 NHTS derived MSA variables using the 2010-2014 5-year American Community Survey B01003_001E variable.

Margin of Error (MOE) — The 95 percent confidence interval of the estimate, calculated in this report by multiplying a factor of 1.984 to the standard error of the estimate. Add and subtract the MOE to the estimate to determine the range of values that the statistic would fall into 95% of the time.

Motorized Vehicle — Motorized vehicles are all vehicles that are licensed for highway driving.

Nationwide Personal Transportation Survey (NPTS) — The name of the national survey program responsible for data collected in 1969, 1977, 1983, 1990, and 1995.

Occupancy — Occupancy is the number of persons, including driver and passenger(s) in a vehicle. NHTS occupancy rates are generally calculated as person miles divided by vehicle miles. See Vehicle Occupancy in Travel Concepts.

Origin — The starting point of a trip.

Passenger — For a specific trip, a passenger is any occupant of a motorized vehicle, other than the driver.

Person Miles of Travel (PMT) — PMT is a primary measure of person travel. When one person travels one mile, one person mile of travel results. Where 2 or more persons travel together in the same vehicle, each person makes the same number of person miles as the vehicle miles. Therefore, four persons traveling 5 miles in the same vehicle results in 20 person miles (4 x 5 = 20).

Person Trip A person trip is a trip by one or more persons in any mode of transportation. Each person is considered as making one person trip. For example, four persons traveling together in one auto are counted as four person trips.

POV A privately-owned vehicle or privately-operated vehicle. Either way, the intent here is that this is not a vehicle available to the public for a fee, such as a bus, subway, taxi, etc.

Travel Day A travel day is a 24-hour period from 4:00 a.m. to 3:59 a.m. designated as the reference period for studying trips and travel by members of a sampled household.

Travel Day Trip A travel day trip is defined as any time the respondent went from one address to another by private motor vehicle, public transportation, bicycle, walking, or other means.

Trip Purpose A trip purpose is the main reason that motivates a trip. In the 2017 NHTS survey, the number of trip purposes were reduced because of the move to self-reported travel on the web. For each trip, the origin and destination are on the file in generic terms, e.g. from work to shopping. There were 19 trip reasons that were on a pick-list for respondents to choose from, and the data were compiled into a legacy format (WHYTRP90) to match previous data from the NPTS/NHTS data series. These legacy purposes used in this report include trips to and from:

'01'	To and From Work (Commuting)
'02'	Work Related Business (meeting or trip)
'03'	Shopping
'04'	Family/Personal Errands (including drop-off/pickup, volunteer activities, and buying services such as cleaners, pet care, automotive care)
'05'	School/Church
'06'	Medical/Dental (any health care visit)
'07'	Vacation
'08'	Visit Friends and Family
'10'	Social/Recreational (exercise, movies, parks, museums and bars)
'11', '98', '99'	Other

Urbanized Area An urbanized area consists of the built-up area surrounding a central core (or central city), with a population density of at least 1,000 persons per square mile. Urbanized areas do not follow jurisdictional boundaries thus it is common for the urbanized area boundary to divide a county.

Vehicle In the 2017 NHTS, the term vehicle includes autos, passenger vans, sport utility vehicles, pickups and other light trucks, RVs, motorcycles and mopeds owned or available to the household.

Vehicle Miles of Travel (VMT)

VMT is a unit to measure vehicle travel made by a private vehicle, such as an automobile, van, pickup truck, or motorcycle. Each mile traveled is counted as 1 vehicle mile regardless of the number of persons in the vehicle.

Vehicle Occupancy

Vehicle occupancy is the number of persons, including driver and passenger(s) in a vehicle; also includes persons who did not complete a whole trip. NHTS occupancy rates are generally calculated as person miles divided by vehicle miles.

Vehicle Trip

A trip by a single privately operated vehicle (POV) regardless of the number of persons in the vehicle.

Vehicle Type

The 2017 NHTS codes vehicles by make and model, and then generally into one of the following major vehicle types:

1. Automobile (including station wagon)
2. Van
3. Sport utility vehicle
4. Pickup truck (including pickup with camper)
5. Other truck
6. RV or motor home
7. Motorcycle
8. Other